Vol. 905 Number 3

OFFICIAL GAZETTE

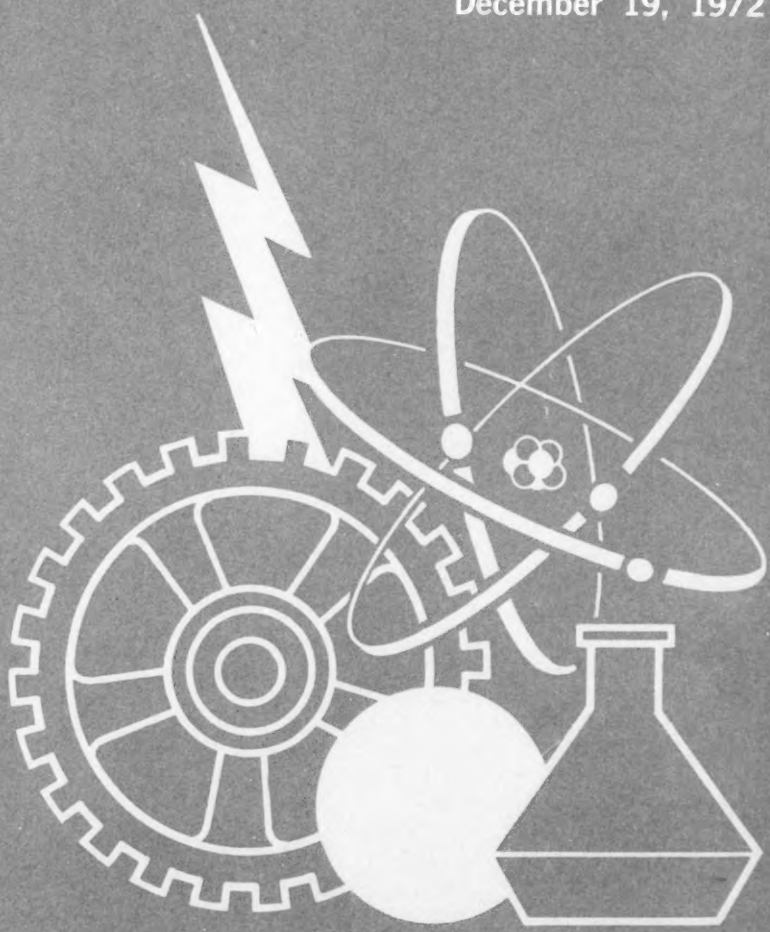
of the
UNITED STATES PATENT OFFICE

S.E.R

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

December 19, 1972



U. S. DEPARTMENT OF COMMERCE

Patent Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

December 19, 1972 Volume 905 Number 3

CONTENTS

	Page
Patent and Trademark Notices	
Status of Rule 69 Proposal	448
ICIREPAT Numbers for Identification of Bibliographic Data on the First Page of Patent and Like Documents	448
Patent Suits	449
Patent Notices	
Certificates of Correction for the Week of December 19, 1972	450
Condition of Patent Applications	451
Defensive Publications	452
Plant Patents Granted	455
Patents Granted	
General and Mechanical	456
Chemical	562
Electrical	619
Design Patents Granted	662
Index of Patentees	PI 1
Indices of Applicants of Defensive Publications, Plants, and Designs	PI 29
Classification of	
Patents	PI 33
Designs, Plants, and Defensive Publications	PI 35
Geographical Index of Residence of Inventors	
Patents	PI 36
Designs, Plants, and Applicants of Defensive Publications	PI 37

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PATENT OFFICE NOTICES

STATUS OF RULE 69 PROPOSAL

This notice is in response to numerous inquiries received by the Patent Office relative to the status of the proposal, published at 37 F.R. 9225 on May 6, 1972 and at 899 O.G. 2 on June 6, 1972, to add a new section 1.69 to Title 37, Code of Federal Regulations.

All of the many written and oral comments received have been analyzed and are currently being studied. The analysis indicates that comments in favor of and against the principle of the rule were about evenly divided. Many comments expressed reservations concerning the language used. The "inconsistency" and "tend to give an impression" clauses drew the most criticism. The first clause was viewed as being too absolute, forcing the affiant or declarant to abdicate reasonable judgment concerning validity of seemingly inconsistent or maverick test results. The second clause was viewed as being too subjective or vague which would result in second guessing later. The additional burden on both applicants and examiners was also advanced as reason to change the proposed language.

In summary, the proposal is still under study with the view of developing a satisfactory way to accomplish the intent of the proposed rule.

S. WM. COCHRAN,
Solicitor.

Nov. 22, 1972.

ICIREPAT Numbers for Identification of Bibliographic Data on the First Page of Patent and Like Documents

The Paris Union Committee for International Cooperation in Information Retrieval Among Patent Offices (ICIREPAT) has recently approved revisions in INID Codes (ICIREPAT Numbers for Identification of Data) which become effective for use by the countries which apply such codes to their documents on January 1, 1973. A complete list of the Codes, as revised, appears below.

Changes in INID Codes which particularly affect their application to U.S. patents consist of the provision of the new codes [75] and [76] that are intended primarily for use by countries in which the national laws require that the inventor and applicant are normally the same. Use of the code [72] which was heretofore applied to U.S. patents will be discontinued and, in lieu thereof, codes [75] and [76], as appropriate, will be used effective with the patent issue of January 2, 1973.

The purpose of INID Codes is to provide a means whereby the various data appearing on the first page of patent and like documents can be identified without knowledge of the language used and the laws applied. They are now used by a number of Patent Offices and have been applied to U.S. patents since Aug. 4, 1970. Some of the codes are not pertinent to the documents of a particular country and some which are may, in fact, not be used. Those codes which are not applicable to U.S. patents or not used are identified in the list below.

[10] *Document identification*
- [11] Number of the document
- [19] ICIREPAT country code, or other identification, of the country publishing the document

[20] *Domestic filing data*
- [21] Number(s) assigned to the application(s), e.g. "Numero d'enregistrement national," "Aktenzeichen"
- [22] Date(s) of filing application(s)
- [23] Other date(s) of filing, including exhibition filing date and date of filing complete specification following provisional specification [1]

[30] *Convention priority data* [2]
- [31] Number(s) assigned to priority application(s)[1]
- [32] Date(s) of filing of priority application(s)[1]
- [33] Country (countries) in which priority application(s) was (were) filed [1]

[40] *Date(s) of making available to the public*
- [41] Date of making available to the public by viewing, or copying on request, an unexamined document, on which no grant has taken place on or before the said date [1]
- [42] Date of making available to the public by viewing, or copying on request, an examined document, on which no grant has taken place on or before the said date [1]
- [43] Date of publication by printing or similar process of an unexamined document, on which no grant has taken place on or before the said date [1]
- [44] Date of publication by printing or similar process of an examined document, on which no grant has taken place on or before the said date [1]
- [45] Date of publication by printing or similar process of a document, on which grant has taken place on or before the said date
- [46] Date of publication by printing or similar process of the claim(s) only of a document [1]
- [47] Date of making available to the public by viewing, or copying on request, a document on which grant has taken place on or before the said date [1]

[50] *Technical information*
- [51] International Patent Classification
- [52] Domestic or national classification
- [53] Universal Decimal Classification [1]
- [54] Title of the invention
- [55] Keywords [1]
- [56] List of prior art documents, if separate from descriptive text
- [57] Abstract or claim
- [58] Field of search

[60] *Reference(s) to other legally related domestic document(s)* [3]
- [61] Related by addition(s)[1]
- [62] Related by division(s)
- [63] Related by continuation(s)
- [64] Related by reissue(s)

[70] *Identification of parties concerned with the document*
- [71] Name(s) of applicant(s)[1]
- [72] Name(s) of inventor(s) if known to be such [1]
- [73] Name(s) of grantee(s)
- [74] Name(s) of attorney(s) or agent(s)[1]
- [75] Name(s) of inventor(s) who is(are) also applicant(s)
- [76] Name(s) of inventor(s) who is(are) also applicant(s) and grantee(s)

Codes [75] and [76] are intended primarily for use by countries in which the national laws require that the inventor and applicant are normally the same. In other cases [71] and [72] or [71], [72] and [73] should generally be used.

Notes concerning the application of INID Codes to U.S. patents:

[1] This item is either not applicable to U.S. patents or, if applicable, is either not coded or not assigned this code.

[2] The respective specific data elements within this category are not individually coded. They are printed in a particular format under the caption "Foreign Application Priority Data" which is identified by the INID Code [30].

[3] The specific data applicable to a particular patent is printed under the caption "Related U.S. Application Data." Where the relationship is due solely to division or to continuation and/or continuation-in-part, the data is identified by the appropriate specific INID Code, i.e., [62] or [63], respectively. Where the relationship is due to any combination of these two specific sub-categories, the data is identified by use of the generic INID Code [60].

Approved:

WILLIAM I. MERKIN,
Assistant Commissioner for Administration.

Nov. 21, 1972.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,713,447, G. L. Maner, PORTABLE PACKING STAND, filed July 19, 1972, D.C., E.D. Calif. (Fresno), Doc. F-687-C, *Maner Packers, Inc.* v. *Arrowhead Farms et al.*

2,715,231, O. F. Marston, FLEXIBLE BUOYANT ARTICLE, filed July 13, 1972, D.C., E.D. Va. (Richmond), Doc. 362-72-R, *Oliver F. Marston* v. *Drug Fair, Inc.*

2,800,440, H. Brown, ELECTRODEPOSITION OF NICKEL; **2,841,602**, Brown, Becking and Tomaszewski, ALKYNOXY ACIDS, filed Apr. 10, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c895, *Ozy Metal Finishing Corporation* v. *Chemetron Corporation.*

2,841,602. (See 2,800,440.)

2,870,548, C. Chedister, DRIVER TRAINING AND TESTING EQUIPMENT; **2,935,794**, H. N. Durham, AUTOMOBILE DRIVER TRAINING AND TESTING APPARATUS; **3,015,169**, Chesiter and Chesiter, DRIVER TRAINING AND TESTING EQUIPMENT; **3,071,874**, C. Chedister, DRIVER TRAINING AND APPARATUS; **3,108,384**, Jazbutis and Crommelin, TRAINING AND TESTING DEVICE; **3,154,864**, A. Jazbutis, VEHICLE SIMULATOR, filed Mar. 9, 1970, D.C. Del. (Wilmington), Doc. 3855, *The Aetna Casualty and Surety Company* v. *Singer-General Precision, Inc. and Allstate Insurance Co.* Stipulation of settlement and order, June 21, 1972.

2,878,356, G. Risk, HOLE MOUNTED RESISTOR; **3,201,855**, same, ELECTRICAL RESISTOR AND METHOD OF MAKING SAME; **3,206,704**, same, ELECTRICAL RESISTOR; **3,295,090**, B. F. Hay, ELECTRICAL RESISTOR HAVING A CORE ELEMENT WITH HIGH HEAT DISSIPATING PROPERTIES; **D. 201,884**, Blake and Rakowsky, RESISTOR HOUSING OR SIMILAR ARTICLE, filed Mar. 8, 1971, D.C.N.H. (Concord), Doc. 3295, *Dale Electronics, Inc.* v. *R.C.L. Electronics, Inc.*

2,896,031, F. M. Young, DIFFERENTIAL AMPLIFIER; **2,997,704**, Gordon and Colton, SIGNAL CONVERSION APPARATUS; **3,054,910**, T. P. Bothwell, VOLTAGE COMPARATOR INDICATING TWO INPUT SIGNALS EQUAL EMPLOYING CONSTANT CURRENT SOURCE AND BISTABLE TRIGGER, filed June 2, 1972, D.C. Mass. (Boston), Doc. CA-72-1757-F, *Gordon Engineering Company and Epsco, Incorporated* v. *Analog Devices, Inc.*

2,906,875, E. T. Molinaro, STATION SAMPLING RADIO, filed June 29, 1972, D.C., S.D.N.Y., Doc. 72-C-2786, *Edward T. Molinaro and Anthony P. Catanzaro* v. *General Electric Company.*

2,935,794. (See 2,870,548.)

2,997,704. (See 2,896,031.)

3,015,169. (See 2,870,548.)

3,054,910. (See 2,896,031.)

3,071,874. (See 2,870,548.)

3,108,384. (See 2,870,548.)

3,154,864. (See 2,870,548.)

3,201,855. (See 2,878,356.)

3,206,704. (See 2,878,356.)

3,295,090. (See 2,878,356.)

D. 201,884. (See 2,878,356.)

2,994,119, A. R. Gagne, MACHINE FOR MAKING CONCRETE CONDUIT; **3,000,070**, same, MACHINE FOR MAKING MULTI-DUCT CONDUIT, filed June 25, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1542, *T.E.L. Pre-Cast Corporation et al.* v. *Gagne Enterprises, Inc. et al.* On stipulation, order, complaint and counterclaim hereby dismissed with prejudice, Feb. 22, 1972.

3,000,070. (See 2,994,119.)

3,267,037, Mitacek and Graham, PROCESS FOR LUBRICATION OF METAL SURFACES DURING WORKING OF THE SAME, filed Apr. 25, 1972, D.C., N.D. Okla. (Tulsa), Doc. 72-C-141, *Heat/Fluid Engineering Corporation* v. *R. & R. Engineering Company, Inc.*

3,302,656, R. D. Boone, METHOD AND MEANS FOR MOVING AN IRRIGATION SYSTEM; **3,500,856**, Boone and Furtell, IRRIGATION SYSTEM WITH DRIVING CHALK LINE, filed May 19, 1972, D.C. Colo. (Denver), Doc. C-4024, *Ralph D. Boone and Charles Griffin* v. *Lockwood Corporation and Lockwood Graders of Colorado, Inc.*

3,315,464, P. M. Hayden, HEAT-EXCHANGE SYSTEM, filed May 30, 1972, D.C., N.D. Tex. (Dallas), Doc. CA-3-5911-C, *Perez M. Hayden* v. *Frigiking Distributing Corporation.*

3,375,495, J. A. Burns, SEATBELT ALARM SYSTEM, filed Mar. 27, 1972, D.C., N.D. Tex. (Amarillo), Doc. CA-2-1194, *Joel A. Burns* v. *American Motors Corp.;* Doc. CA-2-1195, *Joel A. Burns* v. *General Motors Corp.;* and Doc. CA-2-1196, *Joel A. Burns* v. *Ford Motor Company.*

3,392,992, Baker and Baker, TRAILER CONSTRUCTION, filed June 22, 1972, D.C., W.D. Mich. (Kalamazoo), Doc. K68-72CA-4, *Holland Hitch Company* v. *Classic Mfg. Inc. et al.*

3,459,558, Farmer and Chandler, COFFEE PELLET PROCESS, filed June 21, 1972, D.C., S.D. Tex. (Houston), Doc. 72-H-819, *Farmer Bros. Co.* v. *Coca-Cola Company, Inc.*

3,500,856. (See 3,302,656.)

3,538,848, W. P. Barbour, LATCH MEANS FOR A TRAVELING ROLLER PLATEN ON A SWINGABLE CARRIAGE, filed Sept. 22, 1971, D.C., M.D. Fla. (Tampa), Doc. 71-430-C, *Control Data Corporation* v. *Cellulose Products Corporation.*

3,581,865, G. C. Adams, INCLINED TRANSFER STATION, filed July 21, 1972, D.C., W.D.N.Y. (Buffalo), Doc. C-1972-386, *Diamond Machinery Co.* v. *Speedways Conveyors, Inc.*

3,621,689, Koskinen and Solitanner, CYLINDER LOCK OPERABLE WITH TWO KEYS; **3,623,345**, K. H. Solitanner, INTERMEDIATE DISK OF A CYLINDER LOCK; **3,625,034**, I. V. Sinervo, CYLINDER LOCKS, filed May 26, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1340, *Intertrade Industries, Ltd. et al.* v. *Pyromid Coin Operated Protection, Inc. et al.*

3,622,487, Chand and Shaw, APPARATUS FOR MEASURING NITROGEN OXIDE CONCENTRATIONS; **3,622,488**, same, APPARATUS FOR MEASURING SULFUR DIOXIDE CONCENTRATIONS, filed June 15, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-1358-WMB, *Dynasciences Corporation* v. *Manuel Shaw, Robert A. Encke, and Envirometrics, Inc.*

3,622,488. (See 3,622,487.)

3,623,345. (See 3,621,689.)

3,625,034. (See 3,621,689.)

Certificates of Correction for the Week of Dec. 19, 1972

D. 223,818	3,644,421	3,670,550	3,677,470
3,228,741	3,644,599	3,670,695	3,677,864
3,494,311	3,647,205	3,671,034	3,678,010
3,496,532	3,648,755	3,671,268	3,678,070
3,496,758	3,650,254	3,671,379	3,678,095
3,541,458	3,650,185	3,671,507	3,678,112
3,550,487	3,650,542	3,671,571	3,678,315
3,558,106	3,651,130	3,671,764	3,678,414
3,558,604	3,651,370	3,671,829	3,678,554
3,560,413	3,651,675	3,671,932	3,678,780
3,565,089	3,653,483	3,671,976	3,679,120
3,566,165	3,653,689	3,672,260	3,679,298
3,571,680	3,653,902	3,672,284	3,679,307
3,572,486	3,654,102	3,672,658	3,679,400
3,573,736	3,654,458	3,672,780	3,680,190
3,585,348	3,654,657	3,672,818	3,680,226
3,587,529	3,656,765	3,672,953	3,680,264
3,588,694	3,657,046	3,673,104	3,680,783
3,589,138	3,657,250	3,673,258	3,680,804
3,590,314	3,658,261	3,673,261	3,681,003
3,590,623	3,660,134	3,673,281	3,681,011
3,594,009	3,661,009	3,673,344	3,681,141
3,595,216	3,661,815	3,673,507	3,681,209
3,596,931	3,661,889	3,673,628	3,681,672
3,600,358	3,662,438	3,674,226	3,682,049
3,608,455	3,662,506	3,674,420	3,682,117
3,609,755	3,663,214	3,674,543	3,682,475
3,610,524	3,663,461	3,674,722	3,682,489
3,613,612	3,664,677	3,675,025	3,682,702
3,614,551	3,666,070	3,675,129	3,683,071
3,615,804	3,666,447	3,675,184	3,683,294
3,616,468	3,666,501	3,675,320	3,683,299
3,617,626	3,666,619	3,675,483	3,683,586
3,617,893	3,666,928	3,675,625	3,683,621
3,619,217	3,667,032	3,675,758	3,683,722
3,625,890	3,667,094	3,675,761	3,683,778
3,627,645	3,667,673	3,676,081	3,684,032
3,628,076	3,667,887	3,676,194	3,684,304
3,631,199	3,667,932	3,676,645	3,685,177
3,632,864	3,667,959	3,676,647	3,685,571
3,634,639	3,669,487	3,676,807	3,686,322
3,638,176	3,669,820	3,677,041	3,686,766
3,639,462	3,669,866	3,677,129	3,686,813
3,643,507	3,669,964	3,677,259	3,688,645
3,644,340	3,670,028	3,677,398	3,690,211
3,644,341	3,670,519	3,677,404	

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 28, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries, Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-19-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-16-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-09-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-30-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-09-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-05-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-13-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-21-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-21-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-29-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	4-15-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-30-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	9-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry: Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	10-27-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	12-22-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-15-71

Expiration of patents: The patents within the range of numbers indicated below expire during December 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,725,558 to 2,728,912, inclusive
Plant Patents..... Numbers 1,436 to 1,441, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED DECEMBER 19, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T905,001
HEAT-SHRINKABLE PLASTIC FILMS

Bruce Frederick Day, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of abandoned application Ser. No. 8,066, Feb. 2, 1970. This application Aug. 13, 1971, Ser. No. 171,777

Int. Cl. B65b *53/02*
U.S. Cl. 264—25
No Drawing. 5 Pages Specification

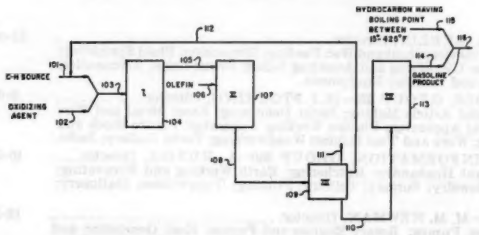
An improvement in heat shrinking plastic films for use on packages, e.g., stacks of articles on large pallets, wherein the film is made completely or partially conductive and is heated by causing current to flow therein. The film can be coated or filled with conductors or semi-conductors. The current can be caused to flow in the film between electrodes or induced to flow in eddy currents by induction.

Films disclosed are PVC and heat shrinkable polyethylene. The films can be rendered conductive by metallizing the surface or by adding fillers such as carbon, powdered metals such as iron, aluminum, zinc, magnesium, and chromium, semi-conductive fillers such as zinc oxide, tin oxide or chromium oxide or metal carbides and nitrides.

T905,002
ALCOHOL CONTAINING GASOLINES

William M. Bunting, 1311 N. Foster Drive 70806, and Clyde L. Aldridge, 6022 S. Pollard Parkway 70808, both of Baton Rouge, La.

Filed Sept. 30, 1971, Ser. No. 185,173
Int. Cl. C10l *1/02*
U.S. Cl. 44—56
1 Sheet Drawing. 26 Pages Specification



A gasoline having a high warm-up index blending value, as well as low vapor lock and RVP blending values can be produced by blending a hydrocarbon stream, a major portion of whose constituents have a boiling point between 15° and 425° F., with an alcohol mixture which is produced by contacting an oxygen-containing gas stream with a hydrocarbon stream comprising C_4 through C_5 hydrocarbons at temperatures and pressures sufficient to maintain a liquid phase and produce a hydroperoxide-rich stream, reacting in the presence of an epoxidation catalyst said hydroperoxide-rich stream with an olefin-containing stream comprising C_3 to C_8 olefins at temperatures between 75° and 400° F. to produce a mixture comprising alcohols and epoxides, and hydrogenating said mixture at temperatures up to 600° F. and pressures up to 3000 p.s.i.g. to produce the desired alcohol stream used in the blending.

T905,003
HYDROPEROXIDE CONVERSION AND EPOXIDATION CATALYST

William M. Bunting, 1311 N. Foster Drive 70806, and Clyde L. Aldridge, 6022 S. Pollard Parkway 70808, both of Baton Rouge, La.

Filed Sept. 30, 1971, Ser. No. 185,411
Int. Cl. C07d *1/08*
U.S. Cl. 260—348.5 L
No Drawing. 16 Pages Specification

Olefin-containing streams are reacted with hydroperoxide-containing streams in a reaction zone operating at temperatures between minus 20° and 200° C. and at pressures sufficient to maintain a liquid phase, and additionally in the presence of a supported, Group VB–VIIB metal catalyst, such as chromium oxide supported on silica to produce an epoxide-containing stream, which epoxides may be utilized in various chemical reactions or subsequently converted into alcohols for gasoline blending and hydroperoxide derivatives which have value such as in gasoline blending or which may be reconverted to hydroperoxides. Hydrogenation using the same catalyst may follow the epoxidation reaction.

T905,004
PHOTOGRAPHIC ELEMENT AND PROCESS

James R. King, 224 Birch Lane, Webster, N.Y. 14580, and Grant M. Haist, 166 Valley Crest Road, Rochester, N.Y. 14616

Filed Oct. 1, 1971, Ser. No. 185,798
Int. Cl. G03c *1/58, 5/34*
U.S. Cl. 96—49
No Drawing. 12 Pages Specification

Light sensitive diazotype compositions employing as the azo-dye forming coupler a monohaloacetyl or alkylcarbamoyl ester of 2,3-dihydroxynaphthalene, e.g., 2,3-bis(chloroacetoxy)naphthalene or 2,3-bis(ethylcarbamoyloxy)naphthalene, exhibit desirable stability and shelf life without acidic stabilizers (precoupling inhibitors) and, after exposure, can be heat developed to yield an azo dye image. Development can be accomplished in the substantial absence of alkali.

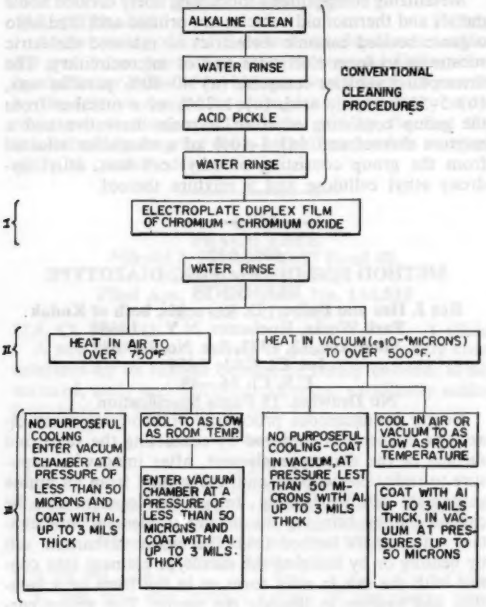
T905,005
ALUMINUM COATING WITH IMPROVED CORROSION RESISTANCE AND METHOD OF MAKING SAME

Lawrence E. Helwig, Hampton Township, Allegheny County, and Michael V. Murray, Monroeville, Pa., and Leland B. Ticknor, Williamsburg, Va., assignors to United States Steel Corporation

Filed Oct. 18, 1971, Ser. No. 190,162
Int. Cl. B23b *15/18*; C23b *5/52*
U.S. Cl. 29—195
1 Sheet Drawing. 14 Pages Specification

A vacuum deposited aluminum coating with improved adherence and corrosion resistance is achieved by employing the following method. The ferrous substrate is

first coated by the electrodeposition of a duplex layer consisting of an underlying layer of chromium metal and an overlying hydrated chromium oxide layer with a thickness of from 0.1 to 1.5 milligrams of chromium per square foot of metal surface. Subsequently the substrate is heated at an elevated temperature for a time sufficient to dehydrate the overlying chromium oxide layer. Thereafter, aluminum is deposited to a thickness of between 0.3 to 3.0 mils in a vacuum chamber maintained at a pressure of less than 50 microns. This method permits the deposition of aluminum over a much wider range of pressures and temperatures than was heretofore possible.


ALKALINE CLEAN
WATER RINSE
ACID PICKLE
WATER RINSE
CONVENTIONAL CLEANING PROCEDURES
I
ELECTROPLATE DUPLEX FILM OF CHROMIUM - CHROMIUM OXIDE
WATER RINSE
II
HEAT IN AIR TO OVER 750°F
HEAT IN VACUUM (e.g. 10⁻⁴ MICRONS) TO OVER 500°F.
III
NO PURPOSEFUL COOLING ENTER VACUUM CHAMBER AT A PRESSURE OF LESS THAN 50 MICRONS AND COAT WITH Al. UP TO 3 MILS THICK
COOL TO AS LOW AS ROOM TEMP.
ENTER VACUUM CHAMBER AT A PRESSURE OF LESS THAN 50 MICRONS AND COAT WITH Al. UP TO 3 MILS. THICK
NO PURPOSEFUL COOLING - COAT IN VACUUM, AT PRESSURE LEST THAN 50 MICRONS WITH Al. UP TO 3 MILS THICK
COOL IN AIR OR VACUUM TO AS LOW AS ROOM TEMPERATURE
COAT WITH Al UP TO 3 MILS THICK, IN VACUUM AT PRESSURES UP TO 50 MICRONS

T905,006

COMPOSITION FOR STRIPPING COATINGS FROM SUBSTRATES

Lou P. Johnson, 407 Whispering Way, and Parker J. Trent, Rte. 5, both of Kingsport, Tenn. 37660

Continuation of abandoned application Ser. No. 20,857, Mar. 18, 1970. This application Oct. 26, 1971, Ser. No. 192,311

Int. Cl. C09d *9/00*; C11d *7/06, 7/32*

U.S. Cl. 252—153

No Drawing. 19 Pages Specification

A stripping composition for removing water-emulsion or metal-complex coatings from substrates such as floors is disclosed. Such coatings are commonly used as floor polish. The composition comprises a solution of phenyldiethanolamine, an alkali sufficient to raise the pH of the composition to above about 10.0, and the concentration of the phenyldiethanolamine between about 0.1 and about 5.0% by weight. Alkalies such as sodium carbonate, trisodium phosphate, sodium metasilicate, sodium orthosilicate, potassium hydroxide, ammonium hydroxide, diethanolamine, morpholine and 2-diethylaminoethanol are suitable. Small amounts of detergents and an alcohol such as isopropanol may be included in the formulation. The compositions are especially effective in removing aged floor polish film. They do not damage floor coverings and are free from the irritating odors of conventional ammonia-based strippers.

T905,007

PROCESS FOR CLEANING GOLD ALLOYS

Rajnikant Babubhai Amin, Wilmington, and Rudolph John Bacher, New Castle, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 16, 1971, Ser. No. 208,979

Int. Cl. C23f *3/04*

U.S. Cl. 134—41

No Drawing. 9 Pages Specification

A process for the cleaning of alloys of gold with minor amounts of tin, silicon, indium, germanium or antimony by treatment with decomposable halogen compounds at elevated temperatures below the melting temperatures of the alloys. Ammonium chloride and glutamic acid hydrochloride are particularly desirable.

T905,008

APPARATUS FOR LIQUID TREATMENT OF FILAMENTS

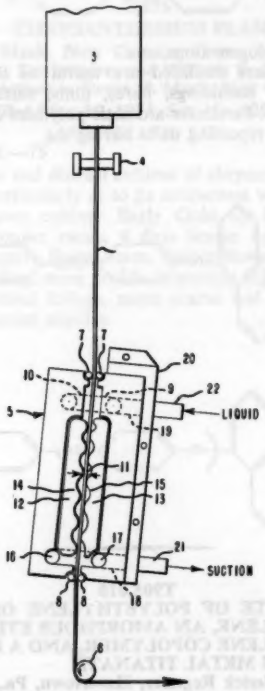
Donald Charles Kiscaden, 303 Valley View Drive, Baldwin Acres, Staunton, Va. 24401

Filed Jan. 5, 1972, Ser. No. 215,614

Int. Cl. D06c *1/00*

U.S. Cl. 28—59

1 Sheet Drawing. 6 Pages Specification



An apparatus for contacting freshly spun filaments with a liquid that includes a pair of undulating surfaces which together define two opposing walls of a serpentine channel through which the filaments pass downwardly in a substantially straight path from an inlet at the top to an exit at the bottom of the apparatus. Means are provided near the top of the channel for contacting the filaments with liquid and in operation the structure of the serpentine channel forces at least a portion of the liquid to make a plurality of passes through the filaments. A vacuum

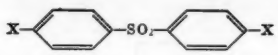
take-off for the liquid is provided which comprises a recess in each of the undulating surfaces near the exit of the channel, each recess being connected to a source of suction to remove liquid entering the recess. The liquid may be water or an aqueous solution of spinning solvent used to cool the filaments after spinning.

T905,009
AROMATIC POLYMERS

Terence Edwin Attwood, Kimpton, John Brewster Rose, Letchworth, and Alan Francis Lennox, Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England

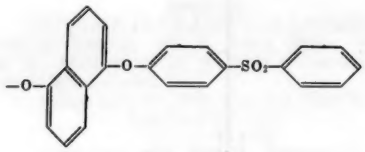
Filed Feb. 1, 1972, Ser. No. 222,697
Claims priority, application Great Britain, Feb. 4, 1971, 3,938/71
Int. Cl. C08g *23/00, 23/16*
U.S. Cl. 260—49
No Drawing. 6 Pages Specification

Aromatic polymers of repeating units of —O—E— and —O—E'— are disclosed, each —O—E— unit flanked by —O—E'— units, the —O—E— units derived from naphthalene-1,5-diol and E' derived from a benzenoid compound of the formula:

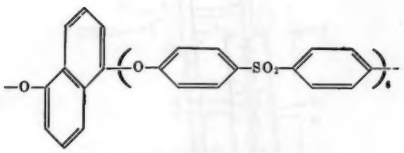


X being a halogen atom.

The polymers disclosed are useful as thermoplastic materials for mouldings, fibres, films, surface coatings and adhesives. Particular aromatic polymers disclosed are composed of repeating units having the



and



T905,010
COMPOSITE OF POLYETHYLENE OR POLYPROPYLENE, AN AMORPHOUS ETHYLENE-PROPYLENE COPOLYMER, AND A FIBROUS ALKALI METAL TITANATE

Richard Frederick Regester, Havertown, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 22, 1972, Ser. No. 228,245
Int. Cl. C08f *45/10*
U.S. Cl. 260—41 B
No Drawing. 9 Pages Specification

A composite is provided of a blend of an ethylene or propylene polymer, a substantially amorphous ethylene/propylene copolymer, and a fibrous alkali metal titanate. The combination of copolymer and titanate additives serves to improve the impact strength of the base polyethylene or polypropylene while also improving modulus and heat distortion properties. The composites may be injection molded. They are particularly advantageous when used for metal plating purposes.

T905,011
METALLIZING COMPOSITIONS CONTAINING THERMOFLUID VEHICLES

Oliver A. Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of abandoned application Ser. No. 137,082, Apr. 23, 1971. This application Mar. 13, 1972, Ser. No. 234,402
Int. Cl. C09d *5/24*
U.S. Cl. 106—1
No Drawing. 7 Pages Specification

Metallizing compositions containing finely divided noble metals and thermofluid vehicles are printed and fired onto organic bonded ceramic dielectrics or matured dielectric substrates to form electrodes and/or microcircuitry. The thermofluid vehicles comprise (a) 40–80% paraffin wax, (b) 5–50% stearic acid, (c) 1–20% of a member from the group consisting of rosin, a rosin derivative and a mixture thereof and (d) 1–10% of a viscosifier selected from the group consisting of ethyl cellulose, ethyl hydroxy ethyl cellulose and a mixture thereof.

T905,012
METHOD FOR DEVELOPING DIAZOTYPE ELEMENTS

Rex J. Hsu and Delbert D. Reynolds, both of Kodak Park Works, Rochester, N.Y. 14650

Filed Apr. 13, 1972, Ser. No. 243,817
Int. Cl. G03c *1/58*
U.S. Cl. 96—49
No Drawing. 15 Pages Specification

Nearly instantaneous processing of two-component diazotype elements is achieved by contacting the sensitized surface of the diazotype element, after imagewise exposure to radiation, with an amine liberated from an amine carbamate salt by heating. Image development can be carried out by bringing the diazotype element into contact with vapors formed from the amine carbamate salt by heating or by bringing the diazotype element into contact with the salt in solid form or in the form of a solution and heating to liberate the amine. The amine carbamate salts which are useful include those derived from alkyl amines, cycloalkyl amines, aralkyl amines and heterocyclic amines. An example of a salt providing particularly good results is α-methylbenzylamine carbamate α-methylbenzylamine salt. When employed in solution form, the amine carbamate salts are preferably dissolved in an alcohol and can be applied to the diazotype element by techniques such as brushing, swabbing, dipping, spraying, wick application and roller application. Solid amine carbamate salts can be utilized in powder form or in the form of a shaped object such as a block or roller. Heating at temperatures of from about 40° C. to about 150° C. and more preferably about 80° C. to about 120° C. provides a dense dye image of good quality.

T905,013
FIBER-PROCESSING PROCEDURE

Robert H. Welsh, Wellesley Hills, and Joseph M. Onorato, Westwood, Mass., assignors to Eastman Kodak Company

Filed June 2, 1972, Ser. No. 259,197
Int. Cl. D06p *5/04*
U.S. Cl. 8—173
No Drawing. 21 Pages Specification

A procedure for reliably processing synthetic fibers, e.g. polyester fibers to reduce the flammability thereof. A class of ethoxylated aliphatic alcohols, e.g. tridecyl alcohol condensed with 8 ethylene oxide groups, are particularly useful when used as cleaning agents in an aqueous bath.

PLANT PATENTS

GRANTED DECEMBER 19, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,272
ROSE PLANT
Roy L. Byrum, Richmond, Ind., assignor to Joseph H. Hill Company, Richmond, Ind.
Filed Apr. 29, 1971, Ser. No. 138,724
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—15 **1 Claim**

A new variety of hybrid tea rose developed as a seedling for greenhouse production of cut flowers and distinguished by the better color of its blooms over that of its parents, by the relative ease of its propagation, by its very strong resistance to disease and mildew, and by the fact that it is extremely fragrant for a hybrid rose and in comparison with most modern varieties.

3,273
PEACH TREE
Nikolai J. Friesen, 41857 Road 42, Reedley, Calif. 93654
Filed Apr. 15, 1971, Ser. No. 134,516
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—43 **1 Claim**

A new and distinct variety of peach tree broadly characterized by its regular bearing of highly colored, firmly textured, early and uniformly ripening, excellently setting fruit having a minimum of fuzz.

3,274
STRAWBERRY PLANT
Harold A. Johnson, Jr., Watsonville, Calif., assignor to Driscoll Strawberry Associates, Inc., Watsonville, Calif.
Filed Apr. 8, 1971, Ser. No. 132,621
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—49 **1 Claim**

1. The new and distinct variety of strawberry plant herein described and illustrated and identified by the characteristics enumerated above.

3,275
STRAWBERRY PLANT
Harold A. Johnson, Jr., Watsonville, Calif., assignor to Driscoll Strawberry Associates, Inc., Watsonville, Calif.
Filed Apr. 9, 1971, Ser. No. 132,920
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—49 **1 Claim**

1. The new and distinct variety of strawberry plant herein described and illustrated, and identified by the characteristics enumerated above.

3,276
CHRYSANTHEMUM PLANT
Grace H. Mack, New Canaan, Conn., and Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Grace H. Mack, New Canaan, Conn.
Filed Mar. 30, 1971, Ser. No. 129,648
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—75 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the known cultivar Early Gold by its ¾" larger flowers, stronger stems, 6 days longer keeping quality, more decorative flower form, deeper flower color, taller, more spreading, more prolific branching, lighter and more deeply indented foliage, more coarse leaf serration, and more prominent stipules.

PATENTS

GRANTED DECEMBER 19, 1972

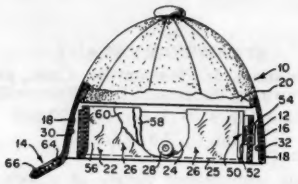
GENERAL AND MECHANICAL

3,706,101

HEAD PROTECTING HEADWEAR

Mario Plastino, 120 Tally Lane, Wantagh, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,005
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **8 Claims**



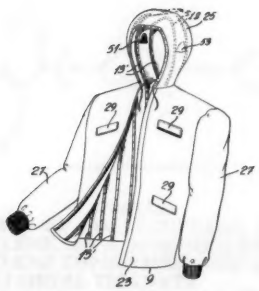
An article of head protecting headwear in which an outer head enclosing shell is supported on its sides on a head band which includes a stiffly flexible band of lesser length than the opening of the shell to thereby provide gaps between the shell and the band forwardly and rearwardly of the points of support. A sweat band is secured to the inner face of the stiffly flexible band. In a preferred embodiment, the stiffly flexible band is adjustable in length at the rear of the shell and the sweat band is non-continuous and terminates short of the adjustable portion of the band.

3,706,102

VENTILATED GARMENTS

Andre Grenier, 401 Moffat Street, Verdun 204, Quebec, Canada

Filed March 15, 1971, Ser. No. 123,965
Int. Cl. A41d
U.S. Cl. 2—84 **10 Claims**



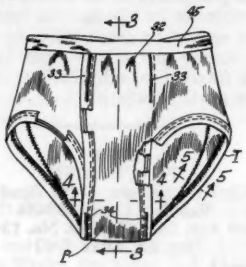
A ventilated insulating material formed of three spaced flexible linings; an outer and an intermediate lining defining between themselves an outer chamber allowing free air circulation and an inner chamber defined by the intermediate lining and an inner lining, the inner chamber being filled with a flexible air pervious insulating material. The outer and intermediate linings stand apart by spaced parallel tubes held against collapse by a cord of air pervious material. These tubes as well as the intermediate and outer linings have apertures for allowing ingress and egress of air.

3,706,103

BRIEF AND METHOD OF PRODUCTION

Karl E. Senser, Riverside, Ill., assignor to Sears, Roebuck and Co.,, Chicago, Ill.

Continuation-in-part of Ser. No. 874,260, Nov. 5, 1969, Pat. No. 3,541,865. This application March 19, 1971, Ser. No. 126,074
Int. Cl. A41b *9/02*
U.S. Cl. 2—224 A **8 Claims**



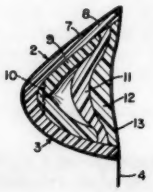
A brief for men and boys characterized by a generally yoke-shaped blank cut from tubular fabric and having a generally triangular central seat portion having a base line approximately the width of the wearer's crotch and a pair of similar elongated vertical panels on opposite sides of said seat portion each about the width of the base line. A continuous tape edge binding is attached to the lower edges of the blank. One of the panels is lapped over the other and a waist band is stitched to the top edge of the blank. The lower edges of the panels in overlapped relation are stitched to the base line of the central portion to complete the garment.

3,706,104

ARTIFICIAL BREAST REPLACEMENT

Leone S. Dehlin, Rte. 1, Box 519, Turner, Oreg., and Vesper J. Howard, 2285 Market St., Salem, Oreg.

Filed Oct. 13, 1971, Ser. No. 188,825
Int. Cl. A61f *1/00*; A41c *3/10*
U.S. Cl. 3—36 **6 Claims**



An artificial breast adapted to be worn inside a brassiere by women who have had their breast removed is provided. The breast is provided with a special concave back and specially arranged front cover which makes the breast fit tightly against the chest and gives it a very natural looking appearance.

3,706,105

PORTABLE PLAY PLATFORM

Winslow C. Nicholas, 705 N. Allen Street, State College, Pa., and Joseph L. Loomis, P.O. Box 81F, Pennsylvania Furnace, Pa.

Filed Nov. 5, 1970, Ser. No. 87,268
Int. Cl. A47d 7/00
U.S. Cl. 5—93 R 5 Claims

This invention is a portable play platform which may be attached or detached to commercially available children's playpens or cribs, giving the child a playing surface to play upon while the child is standing. In general, the device is comprised of a playing surface member usually mounted on the top of the playpen or crib by a bracket attached to the bottom thereof. An adjustable hook-like compression member attached to the playing surface member clamps the upper portion of the playpen against the bracket and a broad torque reaction bar secured between the brackets adjacent to the playpen bears against the playpen thus securing the device rigidly into position. Bolts with wing nuts may be provided to tighten the compression member so as to hold the bracket, and compression member rigidly against the playing surface member.

3,706,106

SURGICAL KNIFE

Norbert Leopoldi, 4180 Marine Drive, Chicago, Ill.

Filed Jan. 18, 1971, Ser. No. 106,992
Int. Cl. B26b 11/00; B67b 7/44
U.S. Cl. 7—14.1 3 Claims

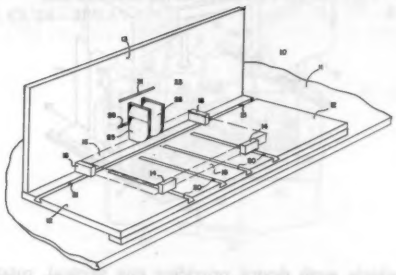
A surgical knife including a base portion having an element removably mounting a surgical steel blade and a removable pin guard for the knife edge and point with a cylindrical tube removably surrounding the knife and pin and having a removable protective cover for the assembly. The base portion is adapted for connection with a utilitarian article and preferably one normally carried on the person.

3,706,107

BOOK JACKETING DEVICE

James A. Cullen, Route 1, Box 159, Silverton, Oreg.

Filed Sept. 3, 1971, Ser. No. 177,581
Int. Cl. B42c 19/00
U.S. Cl. 11—1 6 Claims



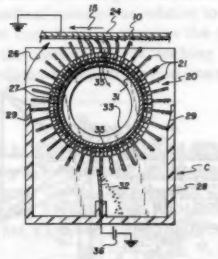
A device usable in the application of jackets to books and including a horizontal portion on which a stack of jackets are stored with retaining blocks confining the jackets in stacked alignment. The blocks are positionable on and lockable to the horizontal portion of the device. A pair of page holding plates confine the closed, upright pages of a book to be jacketed to permit the front and rear book covers to lie flat on the uppermost jacket sheet of the stack whereupon the user may rapidly and simultaneously fold both edges of the jacket over the book covers.

3,706,108

APPARATUS FOR CLEANING A RESIDUAL IMAGE FROM A PHOTOSENSITIVE MEMBER

Clarence Reynold Taylor, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,893
Int. Cl. B08b 1/02
U.S. Cl. 15—1.5 6 Claims



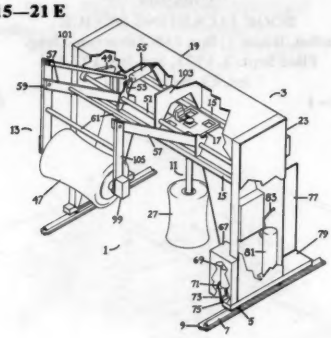
Residual toner particles remaining after transfer of a developed image from a photoconductive surface are cleaned therefrom by a rotatable, hollow core cleaning brush whose blades sweep loose the toner particles from the photoconductor. The brush is provided with a plurality of openings located between the blades and in communication with the core through which the loosened toner particles are withdrawn by vacuum applied to the core. Removal of the residual toner particles may be further assisted by applying a bias voltage to the brush to attract the toner particles to the brush and by using a flicker bar to loosen the toner particles from the cleaning blades.

3,706,109

VEHICLE WASHING DEVICE

Charles W. Bevier, Dallas, Tex., assignor to Weben Industries, Inc., Dallas, Tex.

Filed April 20, 1970, Ser. No. 29,799
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 E **1 Claim**



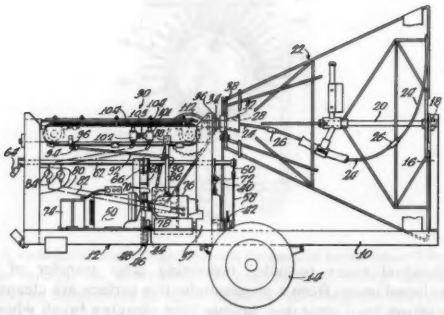
A vehicle wash device providing one vertical, rotatable brush for cleansing of the front, rear and sides of the vehicle, and one horizontal rotatable brush for cleansing of the top of the vehicle. A movable carriage in the form of an arch extending over the vehicle is mounted on tracks adjacent to and on either side along the length of the vehicle and carries both brushes and spraying equipment. The vertical brush is employed to cleanse the sides of the vehicle as the carriage is moved along the tracks, and is employed to cleanse the front and rear of the vehicle by being moved across the overhead portion of the carriage arch while the carriage is stationary. The horizontal brush is applied to the top of the vehicle during movement of the carriage along the tracks. All functions are separately controllable by an operator who is positioned on and moves with the carriage.

3,706,110

CONDUIT CLEANING APPARATUS

Burton L. Siegal, Chicago, Ill., assignor to Conco Inc.

Filed Sept. 9, 1970, Ser. No. 70,774
Int. Cl. B08b *9/04*
U.S. Cl. 15—104.3 SN **8 Claims**



A conduit cleaning apparatus of the type for driving rods flexibly connected in end-to-end relationship with a cleaning tool at one end into and out of a conduit. The assembly includes a rotatably mounted rod storage device having an opening for ingress and egress of the rods and a chain mounting pusher blocks for propelling the rod into a conduit. The upper and rod driving run of the chain is mounted coaxially with the opening in the storage means so that the driving run of the chain is easily accessible. Sprockets mounting the chain are spaced by elongated elements extending directly between the sprockets so that forces applied to the frame are either tensional or compressional and do not create substantial bending moments. A control for the drive includes a system wherein the force applied to the rods, while being driven into a conduit in compression, is less than that applied when the rods are removed from the conduit and in tension.

3,706,111

BRUSH BRISTLES

Dennis Edward Curtin, Parkersburg, W. Va., and John Edward Hansen, Wilmington, Del., assignors to E.I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 785,390, Dec. 19, 1968, abandoned, and a continuation of Ser. No. 66,661, Aug. 24, 1970, abandoned.
This application Aug. 21, 1970, Ser. No. 66,145
Int. Cl. A46b *1/00*; A46d *1/00*
U.S. Cl. 15—159 A **8 Claims**

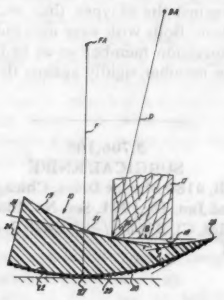
Paint brush bristles formed from polybutylene-1,4-terephthalate exhibiting superior bend recovery and initial modulus of elasticity in flex as well as in paint solvents, satisfactory temperature dependence of modulus and amenability to flagging and tipping.

3,706,112

DOOR STOP

Ronald C. Newell, 1812 2nd Ave. S., Fort Dodge, Iowa

Filed Jan. 4, 1971, Ser. No. 103,616
Int. Cl. E05f *5/02*; E05c *17/54*
U.S. Cl. 16—82 **4 Claims**



The door stop comprises a semi-crescent shaped wedge member having a highly polished or smooth door-engaging concave surface and a convex side having a floor-engaging surface of a rubber-like material. As the wedge member is advanced between the door and the floor, the lower side of the door travels or rides upwardly along the concave surface concurrently with a rolling of the convex side along the floor in a direction toward the large end of the wedge until the door is in a stop position.

3,706,113

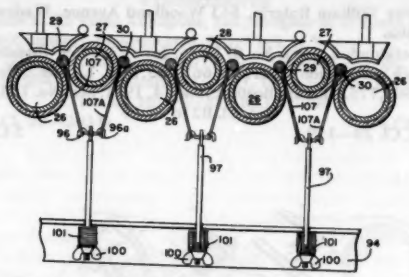
INSERT HOLDDOWN DEVICES

James M. Lapeyre, and Robert F. Couret, both of New Orleans, La., assignors to The Laitram Corporation, New Orleans, La.

Filed July 19, 1971, Ser. No. 163,762
Int. Cl. A22c *29/00*
U.S. Cl. 17—73 **6 Claims**

The present disclosure is directed to holddown devices for insert rolls on shrimp peeling machines and embodies an upright member subject to being spring-loaded at its base and carrying a cross-beam member proximate its top which is

retained in the loose fit by a plastic filler material which will permit the cross-beam to rock relative to the upright member.



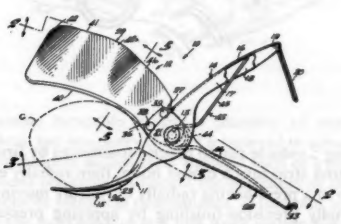
Each end of the cross-beam member is hooked downwardly to pass through and restrain insert roll holddown straps.

3,706,114

CLAM OPENER

Friedrich Waechter, R.D. 2 Neversink Drive, Port Jervis, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,916
Int. Cl. A22c *29/00*
U.S. Cl. 17—75 **8 Claims**



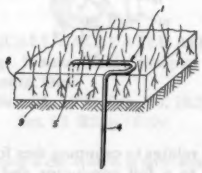
A manually actuated, unitary clam opener having bowl and knife members pivotally interconnected in scissors-like configuration is described. The knife and bowl members define normally open, opposed jaws of a mouth at one end of the opener between which a clam is placed for opening, which jaws are movable together in the closing direction upon manually squeezing together of handle portions at the other end of the clam opener. The knife jaw is so formed as to be of increased effective width from its inner edge to its outer edge to provide for wide spreading apart of the clam shell halves, while the bowl member is shallow enough to permit the resultant spreading apart of the hinge end of the clam supported therein.

3,706,115

STAPLE FOR SOD AND EROSION CONTROL MATTINGS

Robert F. Bleile, R.D. No. 2, South Norwalk Road, Ohio

Filed Feb. 9, 1971, Ser. No. 113,878
Int. Cl. A44b *9/00*
U.S. Cl. 24—87 C **5 Claims**



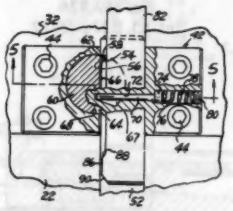
A staple for holding sod in place or for fastening erosion control mattings to the ground includes an asymmetric generally J-shaped head portion and two shank portions of different length which extend perpendicularly to the plane defined by the head portion; when the staple is introduced into the ground the head portion exerts a surface pressure on the sod and the shank portions provide a double anchorage of the staple therein.

3,706,116

LATCH ASSEMBLY FOR MOLD BASES

Herman J. Drazick, 34480 Commerce Road, Birmingham, Mich.

Filed April 1, 1971, Ser. No. 130,299
Int. Cl. A44b *19/00*; A01j *21/00*; A21c *3/00*
U.S. Cl. 24—230 AV **4 Claims**



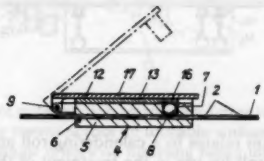
A latch and release mechanism for predetermined, timed separating movement of a plurality of plate members relative to each other, which includes a longitudinal latch bar secured to one plate member and lockingly engagable by a rotatable detent which is spring biased in locking position; and a longitudinal release bar secured to another plate member which is movable relative to the one plate member; both bars are arranged in parallel overlying alignment and said release bar is provided with at least one cam surface adapted to move said rotatable detent member out of engagement with said latch bar when said another plate member is moved away from said one plate member; the rotatable detent is supported within a third plate member; the arrangement is such that in one position of said latch and release mechanism independent movement of said another plate member relative to said one and said third plate member is permitted and in the release position of said latch and release mechanism the third plate member is caused to move conjointly with said another plate member relative to said one plate member by means of a lost-motion connection between said another plate member and said third plate member and which has a magnitude of lost-motion movement corresponding to the distance of free movement of the longitudinal release bar relative to the longitudinal latch bar until the cam surface engages the rotatable detent thereby moving the detent out of locking engagement to release said third plate member from said one plate member.

3,706,117

BRACELETS AND THE LIKE

Walter Axisa, Geneva, Switzerland, assignor to Gemini Investment Etablissement, Vaduz, Liechtenstein

Filed July 27, 1971, Ser. No. 166,446
Int. Cl. A44b *17/00, 11/25*
U.S. Cl. 24—206 **5 Claims**



A bracelet comprises a flexible blade having recesses spaced therealong, a sheath slidably receiving the blade, and a clasp at a blade-receiving end of the sheath. A member incor-

porating a spring is slidably mounted on the clasp body between a position in which a ball is locked in a recess of the blade by the member, and a position in which the ball can be moved out of a recess by deformation of the spring.

3,706,118

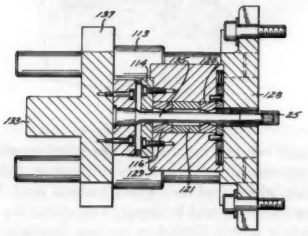
METHOD FOR THE MANUFACTURE OF AN ALUMINUM CARTRIDGE CASE

Ralph W. Hilton, 612 Catalina Avenue, Torrance, Calif., and Gilbert A. Moudry, 2740 Via Campesina, Palos Verdes Estates, Calif.

Continuation-in-part of Ser. No. 801,892, Dec. 16, 1968, abandoned, which is a division of Ser. No. 744,182, July 11, 1968, Pat. No. 3,498,221. This application June 16, 1971, Ser. No. 153,826

Int. Cl. B23p *15/22*

U.S. Cl. 29—1.3 **11 Claims**



A high-strength cartridge case made of an Al-Cu-Mg-Si type alloy is fabricated by backwardly extruding a deep drawn cylindrical blank into a cup-shaped member with a resultant movement in the metal blank of at least about 70 percent, the walls of the cup-shaped member are thinned and elongated by drawing the same through a die aperture of reduced diameter to effect a total metal movement in the original blank of at least about 90 percent, the resultant drawn member is solution heat treated and quenched in cold water to strengthen the metal, and a primer cavity is then forged in the base portion of the member to impart thereto at least about 15 percent cold work.

3,706,119

CALENDERING ROLL

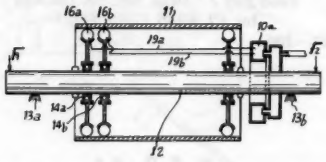
Etienne Collet, 4 bis, Avenue Halphen, Ville D'Avray, France

Continuation-in-part of Ser. No. 686,661, Nov. 29, 1967, Pat. No. 3,543,366. This application Sept. 17, 1970, Ser. No. 73,008

Claims priority, application France, Nov. 30, 1966, 6685516

Int. Cl. B21b *31/32*

U.S. Cl. 29—113 R **4 Claims**



This invention relates to a calendering roll and, more particularly, to a roll for use in the treatment of the surfaces of strip materials, the shape of the surface of the roll being adjustable by means of inflatable resilient cushions arranged internally along its axis of rotation.

3,706,120

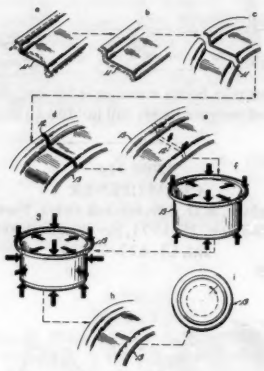
METHOD AND APPARATUS FOR PRODUCING VEHICLE RIMS

Walter William Bulgrin, 543 Woodland Avenue, Wadsworth, Ohio

Continuation of Ser. No. 871,126, June 23, 1969, abandoned, which is a division of Ser. No. 667,485, Sept. 13, 1967, Pat. No. 3,509,775. This application June 14, 1971, Ser. No. 153,081

Int. Cl. B21d *53/30*

U.S. Cl. 29—159.1 **5 Claims**



Forming a vehicle rim to precise tolerances by first forming a contoured strip into a closed hoop; then radially expanding the hoop in a press having radially outwardly moving die sections; finally precision-finishing by applying pressure to all parts of the rim in a press having radially inwardly moving die sections which lock against the outer rim surface while an axially moving punch exerts radial outward, as well as axial, pressure.

3,706,121

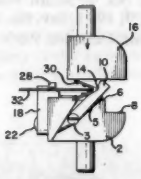
CRIMPING DIES FOR TERMINATING FOIL CONDUCTOR IN A FOIL CONDUCTOR TERMINATION AND FOIL LOCATOR AND HOLDER THEREFOR

James Francis Gillespie, Palmyra, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 27, 1970, Ser. No. 15,166

Int. Cl. H02g *15/00*; H01r *19/04*

U.S. Cl. 29—203 H **2 Claims**



The disclosure relates to crimping dies for crimping an electrical connector to a foil conductor and a foil locator and holder therefore and, more specifically, to crimping dies for use in termination of foil conductors to foil conductor termination and a locator and holder for the foil which is attachable to the crimping die.

3,706,122

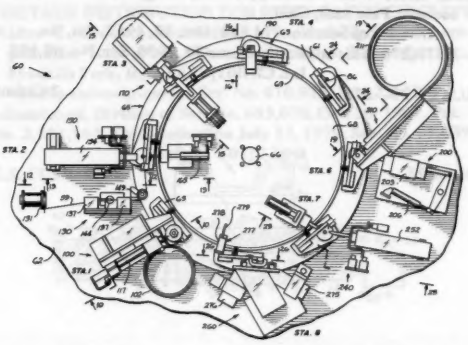
APPARATUS FOR ASSEMBLING ELECTRICAL COMPONENTS

Thomas A. La Valle, Annapolis, Md., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 878,017, Nov. 19, 1969, Pat. No. 3,618,204. This application Aug. 13, 1971, Ser. No. 171,623

Int. Cl. H01r *43/00*; B23p *19/04*

U.S. Cl. 29—203 D 4 Claims



A rotatable turntable having a plurality of workholders spaced about the periphery thereof is indexed to advance each of the workholders successively through each of a plurality of work stations positioned adjacent the periphery of the turntable to assemble electrical components. A first part positioned in one of the workholders at a first work station has the leading end of an insulated wire extending from a supply of wire welded thereto at a second work station, after which the first part is indexed to a third work station without severing the wire extending from the first part to the supply. At the third work station a portion of the wire extending to the first part in the workholder is severed from the supply and the new leading end of the wire is attached to the first part in the next succeeding workholder. The first part is rotated in the first workholder while tensioning the wire extending from and secured to the first part to wind the wire thereon as the workholder is advanced with the turntable through a fourth and a fifth work station to a sixth work station. At the sixth work station a second part is assembled to the first part and, simultaneously, the insulation on a portion of the wire extending from the first part is stripped. At a seventh work station the trailing portion of the wire is welded to a metal cap which is secured to the second part and the strength of the weld is tested, whereafter the electrical component is advanced to a last work station and tested electrically and then sorted.

3,706,123

HYDRAULICALLY ACTUATED APPARATUS

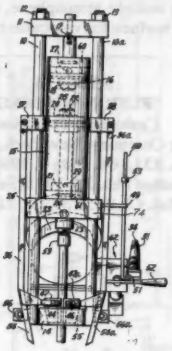
Jon Keyes Whitledge, Mantua, Ohio, assignor to Samuel Moore & Company, Mantua, Ohio

Filed Dec. 31, 1970, Ser. No. 103,187

Int. Cl. B23p *19/04*

U.S. Cl. 29—237 9 Claims

A device combining a die which is split longitudinally into a plurality of parts and a ram for pressing a coupling or fitting on a hose or the like into the die to swage the coupling on the hose. Means are provided for sequentially hydraulically (1) moving the ram towards the die while simultaneously moving the die component parts together to form a die cavity, (2) for pressing a hose and coupling assembly into the die cavity and thereby swage the coupling on the hose, and (3) for lifting the ram from the swaged product while separating the die parts to release the product therefrom.



3,706,124

PROCESS FOR THE PRE-TREATING OF METAL SHEETS WHICH ARE PROVIDED WITH A COATING FOLLOWING A FORMING OPERATION

Lambis Leontaritis, Cologne; Nikolaus Schon, Leverkusen, and Hans Hoffmann, Leichlingen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 3, 1970, Ser. No. 94,977

Claims priority, application Germany, March 7, 1970, P 20 10 888.7

Int. Cl. B44d *1/34*; B21b *45/02*

U.S. Cl. 29—424 9 Claims

This invention relates to an improved process for the pretreating of metallic materials wherein the metallic material is surface-treated, covered with a removable layer comprising a water soluble, film-forming organic polymer and at least one water soluble polymer with a molecular weight of up to substantially 2,000, subsequently formed and provided with a firmly adhering protective layer.

3,706,125

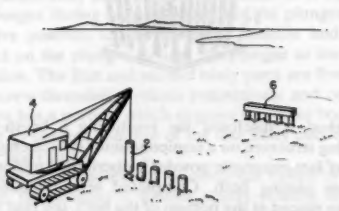
PIPE LINE CONSTRUCTION METHOD

John P. Hopkins, Mercer Island, Wash., assignor to John P. Hopkins Co., Mercer Island, Wash.

Filed Aug. 10, 1970, Ser. No. 62,372

Int. Cl. B23p *19/00*

U.S. Cl. 29—428 9 Claims



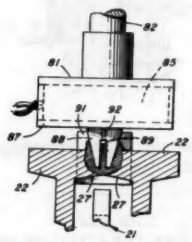
A method of construction an insulated pipe line and vehicular supporting means across an unstable surface including the steps of driving or otherwise inserting piling into the supporting surface along the pipe line path, pre-forming elongated hollow pipe-supporting structures having an upper surface capable of supporting vehicles, setting the structures on the piling by means of a crane which travels along the top of the

structures already placed in position, eliminating the possibility of inadequate support, and then placing the pipe within the structure, again from the top of the structure, and sealing the structure from the outside atmosphere, simultaneously forming a relatively flat surface for vehicular traffic.

3,706,126
FUSION BONDING

Robert Holbrook Cushman, Princeton, N.J., assignor to Western Electric Company, New York, N.Y.

Division of Ser. No. 831,164, June 6, 1969, Pat. No. 3,591,755. This application Feb. 23, 1971, Ser. No. 118,160
Int. Cl. B23k *31/02, 35/24*
U.S. Cl. 29—498 **5 Claims**

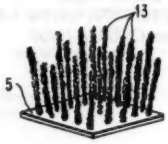


Workpieces fabricated from lead, or other metallic materials having substantially similar characteristics, are fusion bonded by first abutting the workpieces to define an interface therebetween, and the inserting a heated ram having a slot therein into the workpieces, at the interface, to create a localized zone of molten material about the ram and in the slot of the ram. The ram is then withdrawn, the molten material in the slot flows back into the interface, and all the molten material re-solidifies, thereby bonding the workpieces one to the other.

3,706,127
METHOD FOR FORMING HEAT SINKS ON SEMICONDUCTOR DEVICE CHIPS

Sevgin Oktay, Beacon, and Arnold F. Schmeckenbecher, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed April 27, 1970, Ser. No. 32,237
Int. Cl. B01j *17/00*
U.S. Cl. 29—576 **5 Claims**

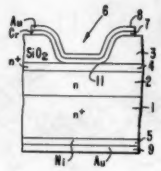


A method is disclosed for producing a brush-like heat exchanging structure on a semiconductor device chip. A given amount of ferromagnetic powder is distributed uniformly in an electroless plating bath. Completed semiconductor device wafers are placed at the bottom of the bath, the rear wafer surfaces facing upward. An array of poles of a single electro-magnet is placed immediately below each wafer, each pole registering with a respective chip position on the wafer. The ferro-magnetic powder is permitted to settle on the rear surfaces of the wafers and then current is applied to each electromagnet attracting substantially equal amounts of ferro-magnetic powder toward each magnet pole. This results in the erection of brush-like structures of ferro-magnetic particles on the rear surfaces of the wafer opposite the individual poles. The bath temperature is then raised to the required operating temperature for electroless plating while each electro magnet remains energized. A uniform deposit of electroless metal transforms the brush-like structures into rigid heat exchangers firmly attached to each wafer at the chip locations. The wafers are then diced to yield individual chips each having its own heat exchanging structure.

3,706,128
SURFACE BARRIER DIODE HAVING A HYPERSENSITIVE N REGION FORMING A HYPERSENSITIVE VOLTAGE VARIABLE CAPACITOR

John Heer, West Newbury, Mass., assignor to Varian Associates, Palo Alto, Calif.

Division of Ser. No. 674,821, Oct. 12, 1967, Pat. No. 3,579,278. This application June 30, 1970, Ser. No. 60,195
Int. Cl. B01j *17/00*
U.S. Cl. 29—578 **2 Claims**

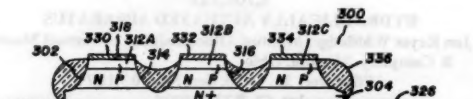


A method of making a surface barrier diode, also known as a Schottky diode, having a hypersensitive voltage variable capacitance, is disclosed. The surface barrier diode structure comprises a silicon wafer of n^+ conductivity having an n-type epitaxial layer which is oxidized on its outer surface to form a silicon oxide layer overlaying the epitaxial n-region of the wafer. The silicon oxide coating is relatively thin, as of less than 5000 A, and is formed relatively quickly, i.e., in less than 20 minutes at a temperature within the range of 1150° to 1250° C in order to produce a hypersensitive n^+ impurity accumulation layer immediately adjacent to and underlying the oxide coating. A hole is then opened through the silicon oxide layer and a metal electrode, as of chromium, is deposited directly upon the hypersensitive n^+ region to form the rectifying junction of the diode. The surface barrier diode (Schottky diode) exhibits a hypersensitive voltage variable capacitance effect where "hypersensitive voltage variable capacitance" means that the capacitance is approximately inversely proportional to the first power of the applied voltage as contrasted with normal voltage variable capacitance effects in PN junction devices wherein the capacitance is approximately inversely proportional to the ½ or ⅓ power of the applied voltage.

3,706,129
INTEGRATED SEMICONDUCTOR RECTIFIERS AND PROCESSES FOR THEIR FABRICATION

Joseph A. McCann, Auburn, N.Y., assignor to General Electric Company

Filed July 27, 1970, Ser. No. 58,271
Int. Cl. B01j *17/00*
U.S. Cl. 29—583 **8 Claims**



A wafer is diffused along opposite surfaces with bands of alternating conductivity type so that a band on one major surface is aligned with a band of an opposite conductivity type on

the opposite major surface. Grooves are formed to separate bands along one major surface while grooves are formed at substantially right angles on the opposite major surface. The wafer may then be sub-divided along the grooves to form integrated rectifier units formed of unitary semiconductive elements. Contacts associated with one major surface may be utilized to provide a thermally conductive path to a thermally conductive, electrically insulative surface of a substrate. The contacts and a passivant associated with the semiconductive element together encapsulate the semiconductive element.

3,706,130

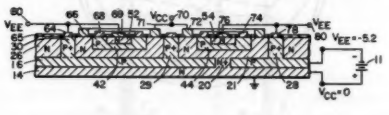
VOLTAGE DISTRIBUTION FOR INTEGRATED CIRCUITS

Walter C. Seelbach, Scottsdale, Ariz., and Kyriakose Lampathakis, Lake Park, Fla., assignors to Motorola, Inc., Franklin Park, Ill.

Continuation-in-part of Ser. No. 610,915, Jan. 23, 1967, abandoned, Division of Ser. No. 683,078, Oct. 30, 1967, Pat. No. 3,581,165. This application July 13, 1970, Ser. No. 61,039

Int. Cl. B01j *17/00*

U.S. Cl. 29—584 **3 Claims**



A voltage distribution system formed in a monolithic integrated circuit structure and a process for making same. Adjacent P-type and N-type conductivity semiconductor layers form respective portions of separate conductive paths for distributing electrical potentials to semiconductor devices or other components within the same integrated structure. P-type and N-type channels are formed within various portions of the semiconductor layers to complete the conductive paths, and reverse biased junctions electrically isolate the conductive paths and prevent electrical interference between same.

3,706,131

METHOD FOR THE FORMATION OF A UNILATERALLY METALLIZED ELECTRET FOIL

Jan Van Turnhout, Delft, Netherlands, assignor to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk, The Hague, Netherlands

Filed Nov. 9, 1970, Ser. No. 88,177

Claims priority, application Netherlands, Nov. 12, 1969, 6916997

Int. Cl. H01s *4/00*

U.S. Cl. 29—592 **9 Claims**

The method for manufacturing a unilaterally metallized electret foil consists in that a quadruple spiral, composed of a first unilaterally metallized foil, provided with a covering layer applied to its non-metallized side and whose metallized surface fits closely to a covering layer on the non-metallized surface of a second unilaterally metallized foil, is heated while a d.c. charging voltage is applied to its two metal layers after which the quadruple spiral is allowed to cool to room temperature, the voltage between the layers is switched off, the quadruple spiral is unwound, the covering sheets are removed and the electret foils separated for use.

3,706,132

MAGNETIC TRANSDUCER FABRICATION TECHNIQUE

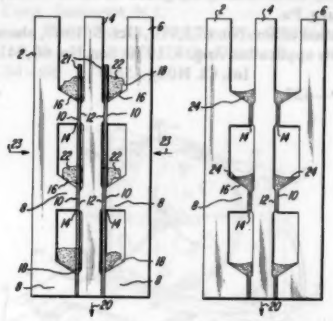
Harry Zane Weaver, Framingham, Mass., assignor to RCA Corporation

Filed Nov. 19, 1970, Ser. No. 90,934

Int. Cl. G11b *5/42*; **H01f** *7/06*

U.S. Cl. 29—603 **6 Claims**

There is described an efficient technique for simultaneously providing a large plurality of magnetic head cores with bonded



gaps having reinforcing fillets.

3,706,133

ELECTRICAL SWITCHES

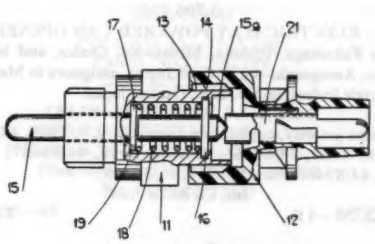
Robert Leonard Gleeson, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed March 15, 1971, Ser. No. 124,180

Claims priority, application Great Britain, March 20, 1970, 13,695/70

Int. Cl. H01h *11/00*, *11/02*, *11/04*, *65/00*

U.S. Cl. 29—622 **4 Claims**



An electrical switch comprises first and second hollow body parts, a conductive plunger mounted in the first body part for axial movement relative thereto and a contact member carried by the second body part. The contact member is engageable by the plunger during axial movement of the plunger from an inoperative position to an operative position and resilient means act on the plunger to urge the plunger to the inoperative position. The first and second body parts are formed with mating screw-threaded portions respectively and one of the body parts has a portion which engages the other body part in a manner to prevent rotation of the one body part relative to the other body part.

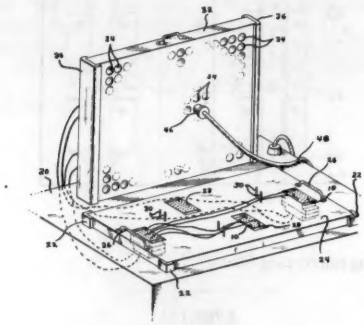
In a method of assembling an electrical switch of the kind described, the plunger is moved axially relative to the one body part by a distance equivalent to the distance moved by the plunger when the plunger is moved from the inoperative to the operative position, the screw-threaded portions of the body parts are engaged, and the second body part is screwed onto the first body part until indicating means acting between the plunger and the contact member indicate that the plunger is in contact with the contact member, and the screw-threaded portion of at least one of the body parts is deformed so as to secure the body parts in position and prevent relative rotation between the body parts.

3,706,134

OPTICAL AID

Joseph Patrick Sweeney, Harrisburg, and Herman Rueger, Lancaster, both of Pa., assignors to AMP Incorporation, Harrisburg, Pa.

Continuation of Ser. No. 672,917, Oct. 5, 1967, abandoned.
This application Aug. 4, 1970, Ser. No. 60,941
Int. Cl. H02g 15/00
U.S. Cl. 29—629 4 Claims



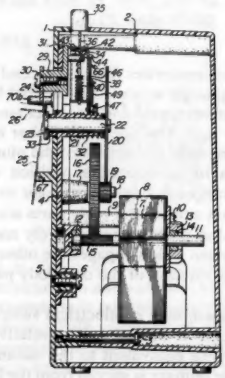
An optical aid is disclosed in several embodiments employing fiber optic cable to transmit light to the side of desired insertion of an electrical lead to better and more quickly identify said site thereby achieving cost savings and greater reliability in harness making. Embodiments are included wherein the optical aid may be programmed to provide a program wiring technique.

3,706,135

ELECTRICALLY POWERED CAN OPENER

Masao Fukunaga, Ichioka, Minato-ku, Osaka, and Kiyoyuki Amo, Amagasaki-shi, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Nov. 5, 1970, Ser. No. 87,053
Claims priority, application Japan, Nov. 8, 1969, 44/89465; Nov. 8, 1969, 44/89466; Nov. 8, 1969, 44/89467; Nov. 8, 1969, 44/89468; Nov. 8, 1969, 44/89469
Int. Cl. B67b 7/38
U.S. Cl. 30—4 R 11 Claims



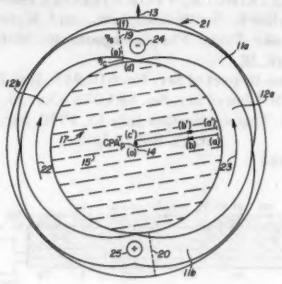
An electrically powered can opener comprising cutter blade operable by manually operated actuator which is operatively connected with cam plate operable to close electric switch for motor for driving feeding gear which in turn rotates and feeds can to be opened so that the latter is urged into cutting engagement with cutter blade. A spring is provided between cutter blade and actuator to allow same to have limited downward lost motion relative to cutter blade so that manual force on actuator is not required to drive cutter blade into cover of can. The spring holds cutter blade in engagement with opened can so that cutter blade cooperates with feeding gear to pinch edge of opened can.

3,706,136

VEHICLE MANEUVER INDICATOR

Ernst A. Sielaff, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed April 5, 1971, Ser. No. 131,382
Int. Cl. G01c 21/20; G01s 7/06
U.S. Cl. 33—1 SD 8 Claims



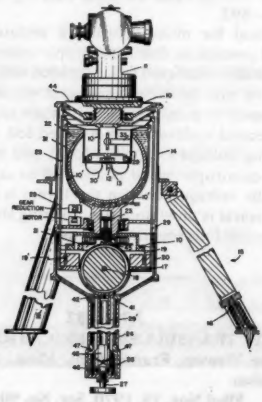
A maneuver indicator device in the form of an overlay for a radar plan position indicator screen is disclosed. The device includes a fixed frame member extending annularly about the periphery of the radar screen, and a transparent rotatable cursor member rotatable with respect to the annular frame about an axis coincident with the sweep axis of the radar screen. Rotation of the cursor member to align parallel lines inscribed on its face with the relative velocity vector as defined by the radar returns of an intruding vessel, aligns command indicia on the cursor with maneuver indicating segments defined on the fixed frame member to provide a direct indication of evasive action in terms of speed and/or course change, and the relative effectiveness of these commands.

3,706,137

FLOATED PENDULOUS GYROCOMPASS

Joseph Wu, Sherman Oaks, Calif., and Joseph Rae Conway, Shaker Heights, Ohio, assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 27, 1969, Ser. No. 869,569
Int. Cl. G01c 19/38, 1/02
U.S. Cl. 33—226 1 Claim



A pendulous gyrocompass wherein the gyro pendulum assembly is supported by a spherical float partially submerged in

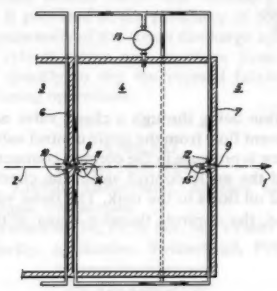
a bath of halocarbon oil. A set of pickoffs senses the precession of the gyro pendulum and causes a theodolite to follow-up the pendulum assembly so that the theodolite aligns to true north. A detachable pendulum arm is provided to give the advantage of a long pendulum arm for accuracy and a short pendulum arm for transit and storage.

3,706,138

METHOD AND DEVICE FOR SEALING ADJACENT CHAMBERS FROM EACH OTHER

Manfred Schuierer, Erbach/Odenwald, Germany, assignor to Bruckner-Apparatebau Michelstadt GmbH, Erbach/Odenwald, Germany

Filed Jan. 18, 1971, Ser. No. 107,317
Claims priority, application Germany, Jan. 20, 1970, P 20 02 349.8
Int. Cl. F26b *5/04*
U.S. Cl. 34—16 1 Claim



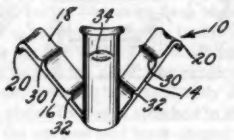
A method and device for sealing from each other adjacent fluid containing chambers connected by a slot to accommodate passage of web material, in which fluid from within chamber is blown inwardly into the chamber in the region of the slot in an angular relation to the web material.

3,706,139

CONSTRUCTION ELEMENTS FOR THE ASSEMBLY OF MOLECULAR MODELS, TOYS AND THE LIKE

George C. Brumlik, 154 Upper Mountain Avenue, Montclair, N.J.

Filed Aug. 12, 1971, Ser. No. 171,180
Int. Cl. G09b *23/26*; F16b *13/04*
U.S. Cl. 35—18 A 10 Claims



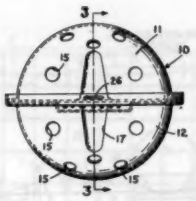
A coupling element for allowing a rod to be inserted and held in a hole in the thin wall of a spherical or other shape body and for maintaining proper alignment. The coupling element includes a plurality of outwardly biased segments with outwardly facing ridges and lips for securely gripping the thin wall. The inner surfaces of the segments include ridges for tightly gripping a rod inserted into the coupling element. The coupling element functions as a bore for the rod with proper alignment being maintained by the tight fit of the coupling element on the thin wall of the body.

3,706,140

MULTI-USE DISPENSING DEVICE

Andre R. Brillaud, New York, N.Y., and Lawrence F. Gallin, Somerset, N.J., assignors to Systematic Research & Development Corp., Somerset, N.J.

Filed Nov. 25, 1970, Ser. No. 92,696
Int. Cl. F26b *19/00*
U.S. Cl. 34—60 13 Claims



A dispenser consisting of an opened celled housing or vessel forming a chamber of predetermined size permeable to the ingress and egress of fluids more particularly volatile gases to permit escape or dispensing of such gases or other fluids from the chamber into a desired environment. At a critical temperature a means is mounted in or on the vessel for loading and holding of materials to be dissolved or volatilized at the critical temperature and for passing the dissolved substance or the resultant gas to the chamber for dispensing or escape through the permeable walls of the vessel. The material to be dissolved or volatilized will as a general rule be held in a carrier or like device which will degrade or act to release the material to be dissolved or volatilized.

ERRATUM

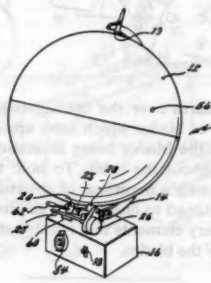
For Class 35—18 A see:
Patent No. 3,706,139

3,706,141

ORBITING SYSTEM SIMULATOR

Thomas F. McGraw, 808 Felbar Ave., Torrance, Calif.

Filed Sept. 25, 1970, Ser. No. 75,507
Int. Cl. G09b *27/00*
U.S. Cl. 35—45 7 Claims

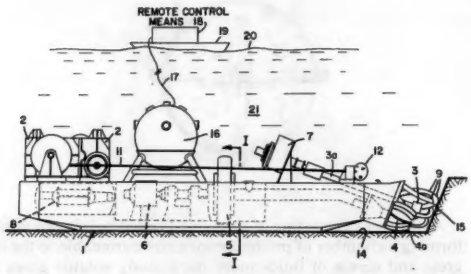


The orbiting system simulator provides a graphic, basic representation of the ground track or path followed by the movement, on the earth's surface of a point on an imaginary line drawn from the center of the earth to an orbiting satellite. The earth-globe of the simulator, and its optical indicator are motor-driven to illustrate the relative motion between the earth and the satellite and takes into account the angle of inclination, right ascension, earth rotation, and can include recession of the nodes. Furthermore, the simulator is easily adjustable and can utilize a plurality of accessories to permit simulation of a wide variety of possible ground tracks.

3,706,142
SUBMARINE DREDGING APPARATUS

Guido Brunner, Milan, Italy, assignor to Shell Oil Company, New York, N.Y.

Filed Sept. 15, 1970, Ser. No. 72,427
Claims priority, application Italy, Sept. 17, 1969, 22,131 A/69
Int. Cl. E02f 3/92
U.S. Cl. 37—56 9 Claims

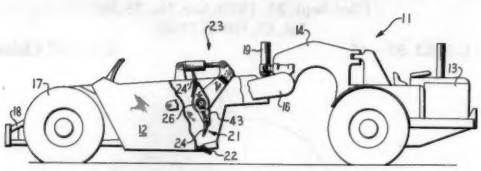


An underwater dredging device comprising a self-propelled submersible mechanical craft having devices and equipment to carry out dredging work underwater, and means for supplying electrical energy from an external source to operate these devices and equipment, and control devices thereof, the control devices being contained in a watertight bell capable of accommodating one or more operators.

3,706,143
SELF-LOADING MECHANISM FOR A SCRAPER

Harvey A. Knell, Joliet; James A. Olthoff, South Netherlands; Barry A. Scoggin, Plainfield, and Roger M. Smith, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed July 16, 1970, Ser. No. 55,465
Int. Cl. B60p 1/00
U.S. Cl. 37—4 6 Claims



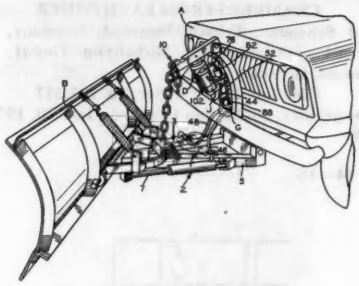
Movement of earth over the cutting edge of a scraper is assisted by a pair of blades which orbit around an axis above the cutting edge, the blades being maintained in an upright orientation throughout the orbit. To hold the blades in the fixed orientation with a minimum of structural complication, the blades are fastened to links which are connected between two eccentric rotary elements that revolve about spaced apart axes at one side of the blades.

3,706,144
CONTROL MEANS FOR A SNOW PLOW

Marc L. Miceli, Cleveland, Ohio, assignor to Meyer Products, Cleveland, Ohio

Filed Aug. 6, 1970, Ser. No. 61,782
Int. Cl. E01h 5/04
U.S. Cl. 37—42 9 Claims

The disclosure shows ram means connected to control the angle of the snow plow to push snow straight ahead or to either side, and a single-acting ram connected to lift the plow. An electric motor-driven pump delivers oil through a check valve to a selector valve connected to the lift ram and to an angle control valve and operable to direct oil under pressure to either the lift ram or the angle control valve to the exclusion of the other. A plow-lowering valve connecting the lift ram and the tank is operable to permit oil flow from the lift ram to allow the plow to come down, or to block such flow. The angle control valve has two connections with the angling ram means, with the selector valve as aforesaid, and with the tank, the

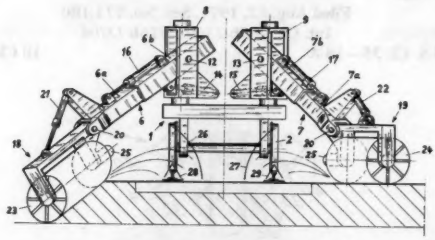


tank connection being through a check valve normally positioned to prevent flow from the angle control valve to the tank but when there is pressure in the conduit connecting the selector valve and the angle control valve, the check valve is inoperative and oil flows to the tank. The three valves are solenoid-operated, the controls therefor being at the operator's station.

3,706,145
MACHINE FOR THE BALLASTING OF RAILROAD TRACKS

Herbert Bucksch, Ruskau, and Helmut Koch, Rhine, both of Germany, assignors to Rheiner Maschinenfabrik Windhoff Akt.-Ges., Rheine, Germany

Filed Sept. 14, 1970, Ser. No. 71,898
Claims priority, application Germany, Oct. 20, 1969, P 19 52 715.2
Int. Cl. E02f 5/22; E01b 27/02
U.S. Cl. 37—105 7 Claims



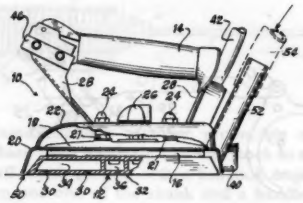
A machine for maintaining railroad tracks through the conveying of ballast from the roadbed on either side toward and into the track. The machine is adapted to ride on the track, and includes a pair of ballast brushes mounted on supporting arms which project outwardly on opposite sides of the track. The support arms are pivotally mounted on the machine for movement about vertical and horizontal axes and are telescopically extensible to obtain the desired arm reach with respect to the roadbed. The brushes are mounted on frames which tilt adjustably relative to the support arm and are driven by variable speed hydraulic motors.

3,706,146

HAND IRON

Arvid B. Anderson, Park Ridge, Ill., assignor to Bishop Freeman Company, Evanston, Ill.

Filed March 29, 1971, Ser. No. 129,054
Int. Cl. D06f *75/00*
U.S. Cl. 38—75 4 Claims



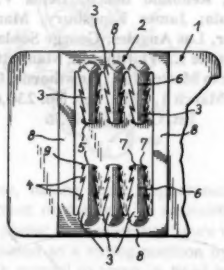
An electrically heated steam and vacuum hand iron. A vacuum port is provided at the periphery of the soleplate of the iron and outwardly of the steam discharge apertures in the soleplate to extract steam and moisture from the pressed fabric, more quickly to dry the pressed fabric, thereby to speed hand ironing operations.

3,706,147

TAG FOR NETS

Jules Glaser, Zurich, Switzerland, assignor to Unisto AG, Horn, Thurgau, Switzerland

Filed Feb. 24, 1970, Ser. No. 13,467
Claims priority, application Switzerland, Feb. 27, 1969, 2992/69
Int. Cl. A44c *3/00*
U.S. Cl. 40—2 20 Claims



A tag destined to be attached to a net which will be used for packing articles, such as for example fruit and vegetables for display in a store, is formed by a small plate which is provided with a plurality of elongate strips having their longitudinal edges formed with barbs. The strips have one end fixed to the plate and extend in a direction slightly inclined to the plane of the plate, so that the free ends of the strips project outwardly beyond the back face of the plate. The projecting free ends of the strips are bent inwardly and resiliently abut against the back face of the plate. The tag is attached to the net by sliding some meshes of the net past said hook-shaped free ends of the strips into the space formed between the inclined strips and the back face of the plate, where the meshes are engaged by the barbs formed on the longitudinal edges of the strips.

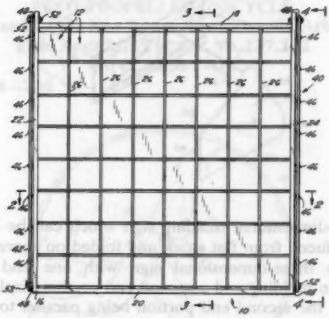
3,706,148

DISPLAY ASSEMBLY

Shaun C. Johnston, 215 W. 83rd Street, New York, N.Y.

Filed Jan. 21, 1971, Ser. No. 108,519
Int. Cl. G09f *11/02*
U.S. Cl. 40—77.7 22 Claims

A display assembly comprises a plurality of display elements mounted on a framework in a composite array. Each display element is provided with a plurality of display surfaces having distinct appearance characteristics. The elements may be individually rotated on the supporting framework to any one of a plurality of display positions wherein one of its surfaces is in display orientation. Means are provided for facilitating this process by simultaneously tilting all elements out of their coplanar display orientation.



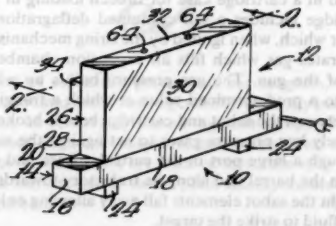
Means are also provided for automatically returning all display elements to a predetermined tilted orientation corresponding to a predetermined composite pattern, said means being in the form of a display element engaging means movable between first and second positions. Each time said display element engaging means is thus moved the elements projecting into its path are rotated to their next position until they all reach the predetermined orientation in which they remain clear of the display element engaging means.

3,706,149

DISPLAY DEVICE

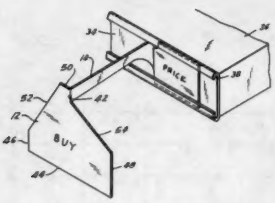
George Olivieri, Willow Springs, Ill., assignor to Thomas M. Rowan, Chicago, Ill., a part interest

Filed Sept. 29, 1970, Ser. No. 76,419
Int. Cl. G09f *13/24*
U.S. Cl. 40—106.22 11 Claims



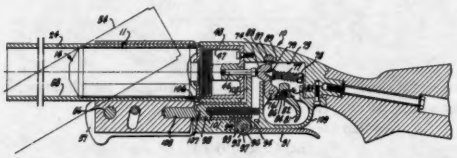
A display device for producing a constantly changing, completely random multi-colored effect is disclosed herein. The display device includes wall means dividing a fluid compartment into a plurality of juxtaposed chambers having highly viscous fluid therein, and means are provided in the lower portion of each chamber for generating bubbles of air within the fluid. Each of the fluids has a different color, and the walls within the chambers have sufficient light transmissibility, so that when a light source illuminates one side of the display device, the air bubbles passing upwardly through the chambers will create the desired visual effect.

3,706,150
THREE-DIMENSIONAL MOLDING SIGN AND METHOD OF FABRICATING SAME
William Greenberger, White Plains, N.Y., assignor to The Hopp Press Incorporated, New York, N.Y.
Filed March 22, 1971, Ser. No. 126,824
Int. Cl. G09f *1/00*
U.S. Cl. 40—124.1 **1 Claim**



A three-dimensional molding sign which can be inexpensively produced from flat stock and folded on score lines to produce a three-dimensional sign with one end portion anchored in molding and a second end portion displaying information, the second end portion being parallel to the end portion in the molding and connected thereto by an intermediate portion which projects outwardly therefrom.

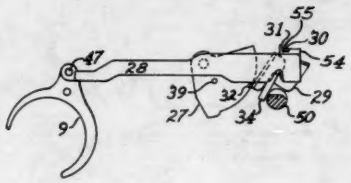
3,706,151
GUN AND PROJECTILE FOR SHOOTING FLUIDS
Robert M. McNeill, Box 1353, Mountain View, Calif.
Filed May 1, 1970, Ser. No. 33,691
Int. Cl. F41c *27/06*
U.S. Cl. 42—1 R **13 Claims**



A gun and projectile for shooting a volume of fluid or gas payload such as water, napalm jelly, or a marker dye. The fluid is enclosed in a thin plastic envelope carried by a sabot which is mounted in a cartridge case for breech loading in the gun. The cartridge includes a self contained deflagration charge and primer which, when ignited by the firing mechanism of the gun, generates gas which fills an expansion chamber in the receiver of the gun. The gas pressure builds up within the chamber to a predetermined value at which a frangible connection between the sabot and cartridge base is broken allowing relatively low pressure gases to act against the sabot seal plate through a large port in the cartridge base and urge the sabot from the barrel and along its trajectory towards the target. In flight the sabot elements fall away allowing only the envelope of fluid to strike the target.

3,706,152
FIREARM
Gary Wilhelm, Hamden, Conn., assignor to Stoeger Arms Corporation, Hackensack, N.J.
Division of Ser. No. 766,380, Oct. 7, 1968, Pat. No. 3,614,908.
This application Sept. 27, 1971, Ser. No. 90,199
Int. Cl. F41c *17/08*
U.S. Cl. 42—70 D **2 Claims**

Shown in a toggle action recoil operated semiautomatic pistol is a safety shoe interposed between the sear and a rotatable shaft controlled by a lever mounted on the outside of the gun frame. The sear is channel shaped with side walls extending rearward, its transverse leading edge being releaseably engaged with the hammer when the gun is cocked. The sear and the safety shoe are pivotally mounted on the same pin with the safety shoe positioned between the side walls of the sear. A projection on the leading edge of the safety shoe in

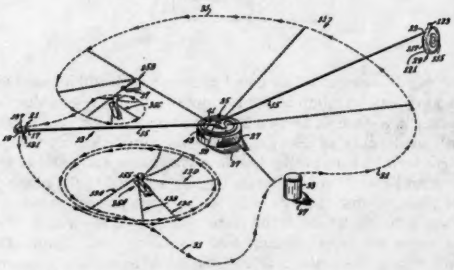


loose fit engagement in a slot in the sear retains the safety shoe in loose fit engagement in a slot in the sear retains the safety shoe at right angles to the hammer engaging edge of the sear. Limited rotation of the shaft will cause the safety shoe to be wedged between it and the sear, preventing its disengagement from the hammer.

ERRATUM

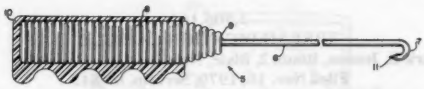
For Class 43—53.5 see:
Patent No. 3,706,154

3,706,153
REMOTELY CONTROLLED WHEELED TOY VEHICLE SYSTEM
Henry J. Folson, Redondo Beach; Denis V. Bosley, Palos Verdes Peninsula; James Kingsbury, Manhattan Beach; Shlomo Kraitzer, Los Angeles; George Soulakis, North Hollywood, and Jimmie L. Whittington, Manhattan Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed March 1, 1972, Ser. No. 230,684
Int. Cl. A63h *17/36*
U.S. Cl. 46—202 **16 Claims**



A system whereby a powered toy vehicle is attached to one end of a hand-held control line that slidably passes through a hub member rotatably mounted on a stationary base, the length of the line between the vehicle and the hub being controlled by manual movement of the remainder of the line toward and away from the hub. The system may also include one or more fixed pylons disposed on the playing surface between the vehicle and the hub to temporarily engage the line and thereby shorten the length of the line about which the vehicle pivots.

3,706,154
FISHHOOK REMOVER
Earl H. Luebbers, 611 21st Street, Carlyle, Ill., and Bertis N. Kingsley, Albers, Ill.
Filed Feb. 16, 1971, Ser. No. 115,227
Int. Cl. A01k *97/00*
U.S. Cl. 43—53.5 **4 Claims**

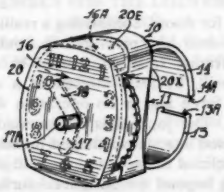


An improved fishhook remover producible on a mass production basis from relatively stiff wire stock so as to have a relatively stiff shank portion with a fishhook engaging hook formation on one end of the shank and a handle integrally formed on the opposite portion in the form of an elongated tightly coiled spring. The spring handle may be telescopically inserted within a grip member. The fishhook engaging hook portion may be either coplanar with the shank or in a plane approximately at right angles thereto.

3,706,155
JOINTED FIGURE TOY HAVING COOPERATING BEARING SURFACES OF DUPLICATE SIZE AND CONTOURS
Armando M. Balza, Whittier, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Aug. 30, 1971, Ser. No. 175,985
Int. Cl. A63h *3/46*
U.S. Cl. 46—151 **2 Claims**

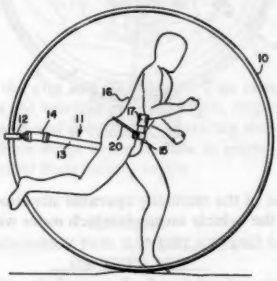
Figure toy torso, having same appearance when viewed from either the front or the rear, is rotatably connected to trunk along a 45° planar surface so that figure toy is converted from standing position to a sitting position by rotating torso 180° placing trunk normal to torso. A head is rotatably connected to torso and is turned to face the front of doll after rotation of torso.

3,706,156
MUSICAL WRISTWATCH TOY
Ernest LaVerne Thornell, Horicon, Wis., assignor to Marlin Toy Products, Inc., Horicon, Wis.
Filed Feb. 22, 1972, Ser. No. 227,881
Int. Cl. A63h *5/00*
U.S. Cl. 46—175 R **16 Claims**



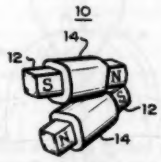
A toy wristwatch containing a wind-up music box which drives the hour hand. Molded plastic components are contrived to form a simple assembly including a watch case contoured to fit the wrist and provide a sound chamber in which the music box is disposed in a particular angular orientation and spacing for acoustic and wind-up purposes by a combination mounting and resonating panel having snap-fit engagement therein, other molded components interfitting with the case structure to complete the assembly including wrist bands secured in a seated condition by the resonating panel.

3,706,157
FOOT PROPELLED UNICYCLE
Leon D. Bandy, 1652 East Roeser Road, Phoenix, Ariz.
Filed April 26, 1971, Ser. No. 137,242
Int. Cl. A63h *17/14*
U.S. Cl. 46—220 **4 Claims**



A foot propelled unicycle directed and motivated by body movement of the operator.

3,706,158
MULTI-MAGNET MAGNETIC TOY
David R. Jensen, Mountain View, Calif., assignor to J/D Scientific, Palo Alto, Calif.
Filed April 29, 1971, Ser. No. 138,496
Int. Cl. A63h *33/26*
U.S. Cl. 46—236 **10 Claims**

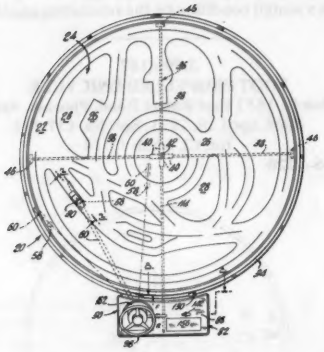


A plurality of miniature permanent bar magnets, each of which has a nonmagnetic sleeve generally centrally positioned thereon, may be removably joined together at opposite poles to form a multi-segment sculpture, doodle, or other art form or structure. The resultant art form or structure may be supported on a ferromagnetic metal plate fixedly mounted on a nonmagnetic base.

3,706,159
TOY FOR SIMULATING VEHICLE TRAVEL
Raymond J. Lohr, and Carl J. Merl, both of Erie, Pa., assignors to Louis Marx & Co., Inc., New York, N.Y.
Filed Jan. 3, 1972, Ser. No. 215,969
Int. Cl. A63h *33/26*
U.S. Cl. 46—240 **12 Claims**

A toy which simulates the travel of a vehicle along roads. A rotary disc has an upper surface which simulates roads and terrain bordering on the roads. A drive is connected to the disc for rotating the latter, and a toy vehicle has wheels which rest on the upper surface of the disc so that when the latter

rotates the vehicle will appear to travel on the upper surface of the disc. A manually operable structure coacts with the vehicle for moving the latter with respect to the disc, so that by



manipulation of the manually operable structure it is possible to maintain the vehicle on roads which move with the rotating disc.

3,706,160

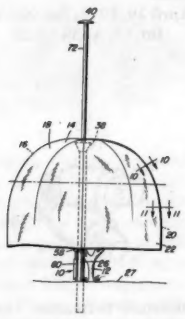
UMBRELLA AND UMBRELLA TREE FROST COVER

Harold Leroy Deibert, R.D. 2, Greenwich, Ohio

Filed Aug. 19, 1971, Ser. No. 173,027

Int. Cl. A01g *13/02*

U.S. Cl. 47—21 **9 Claims**



This device is an umbrella and an umbrella tree frost cover which is operable to open and to closed position by a valve controlled pneumatic pressure mechanism. It has an umbrella rod to which umbrella ribs are pivotally secured and it includes an inner two-way hoist cylinder in which the umbrella rod is secured to a piston rod and piston actuated by the pressure to push up the umbrella ribs and an attached cover from out of an outer base cylinder, and the pressure may then be exerted on the top of the piston to retract the umbrella ribs and cover the outer base cylinder.

When used as a tree frost cover, the outer base cylinder is partly embedded in the ground adjacent the trunk of the tree it will cover, and when operated, the umbrella portion extends over the top of the tree and has depending tree frost cover portions which droop down from the umbrella portions to adjacent the ground. It may be made in various sizes to fit different size trees.

In the umbrella form, the ribs are tempered and of inverted U-shape, and support the umbrella cover in usual umbrella position. In tree frost cover form, the ribs extending from the inverted U-shaped tempered ribs beyond the umbrella portion are flattened out, not tempered, and are flexible, so that the tree frost cover thereon droops down to below the lower tree branches, thus protecting the fruit against frost.

3,706,161

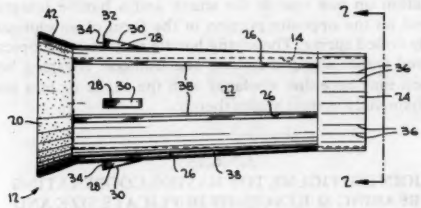
TREE MEDICATION CAPSULE

Clark E. Jenson, Route 2, Blair, Nebr.

Filed Nov. 16, 1970, Ser. No. 89,815

Int. Cl. A01g *7/06*

U.S. Cl. 47—57.5 **4 Claims**



A tree medication capsule for insertion into a hole in the trunk of a tree includes a hollow cartridge driven into a predrilled hole in the tree with wound dressing sealing the hole; barbs on the cartridge engage the sides of the hole to prevent the tree from ejecting the capsule while the tree sap dissolves sealant material in slots in the cartridge to free the medication in the capsule for absorption by the tree.

3,706,162

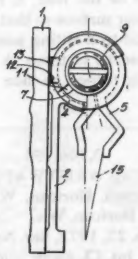
SEALING MEANS FOR DOORS

Per Gunnar Werner, 1460 Spro, Norway

Filed Jan. 20, 1971, Ser. No. 107,940

Int. Cl. E06b *7/20*

U.S. Cl. 49—312 **2 Claims**



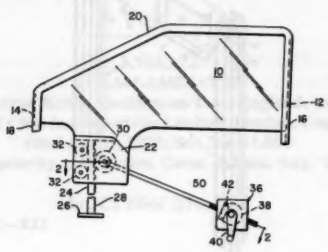
Sealing means for doors, comprising a resilient list rotatably mounted on the door and pivotable by contact of a journal with the door frame, from horizontal to sealing position against the doorsill, by axial motion of a control member against a spring force and in co-operation with a stationary inclined surface. The journal is surrounded by the helical spring and disposed in a sleeve-shaped member which is provided with the inclined surface, and the said journal has a projection extending beyond the peripheral surface of the sleeve and sliding in an axial groove in a mounting member secured to the door.

3,706,163

WINDOW REGULATOR

Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

Filed May 11, 1970, Ser. No. 36,110
Int. Cl. E05f 11/42
U.S. Cl. 49—362 11 Claims



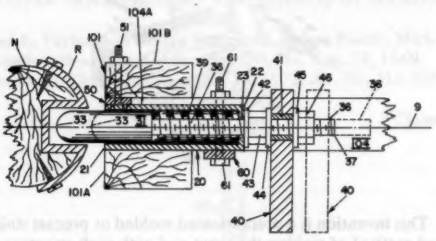
Window regulating mechanism for vehicle windows of the type connected to a slightly curved vertically extending post for vertical guided movement between open and closed positions.

3,706,164

GATE LATCH ADAPTABLE FOR USE WITH MULTI-PANELS TYPE FARM GATES

Loy E. Glause, RFD No. 1, Palmer, Nebr., and Gene N. Glause, RFD No. 1, Libory, Nebr.

Filed March 22, 1971, Ser. No. 126,696
Int. Cl. E05c 17/04
U.S. Cl. 49—394 3 Claims



There is provided an exceptionally reliable, versatile, and sturdy gate latch assembly having particular utility with multipanels type farm gates. The gate latch assembly generally comprises an elongate tubular housing horizontally positionable between forwardly disposed upright-panels of a farm gate, a linearly elongate manually rearwardly resiliently depressible spindle disposed within and extending forwardly of the tubular housing, and means (preferably in the form of at least one dual-lobed mounting-ear) for attaching the tubular housing to an upright closure such as a multipanels type farm gate.

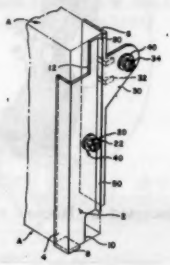
3,706,165

SUPPORT ASSEMBLY FOR THE LOUVER OF JALOUSIE WINDOWS

Manuel Ray Baldrich, G.P.O. Box 3443, San Juan, P.R.

Filed May 20, 1971, Ser. No. 145,197
Int. Cl. E06b 7/08
U.S. Cl. 49—403 2 Claims

A louver for a jalousie window is provided with an end clip by which the louver is pivotally supported on the window frame and to which rotary movement is imparted to operate the louvers. The clip is integrally formed from a synthetic plastic material and has two pins with enlarged heads which are transversely compressible providing, respectively, pivotal support means and connection to the louver operating means, allowing the clip to be easily installed by an unskilled person using only manual pressure, and has a washer integrally formed at the base of each pin which separates the clip from its support and reduces friction between them, and has a flexible fin formed on the bottom surface of the clip to seal the joint between the clip and its support. Two elongated strips are provided in the window opening which, respectively, support the pivot pins and provide the operating means for rotating the clips, these strips being flexible to permit them to be coiled for shipment from factory to job.

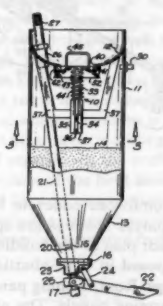


3,706,166

FILL CAP ASSEMBLY FOR SANDBLASTING MACHINES OR THE LIKE

James D. Burtin, c/o Detroit Tool and Engineering Co., P.O. Box 232, Lebanon, Mo.

Filed June 18, 1970, Ser. No. 47,526
Int. Cl. B24c 3/00
U.S. Cl. 51—12 9 Claims



The assembly includes a spring-loaded closure cap and attached stem reciprocatively mounted to a support carried internally of a pressurized tank. The support includes a pair of armsholding a slotted sleeve in register with the container fill aperture and in alignment with the stem. The stem is provided with a latch pin received by the slotted sleeve and the assembly may be held in an open position by depressing the closure cap sufficiently so that the pin clears the sleeve to permit the stem to be rotated to a latched position. In the closed position of the fill cap assembly, internal container pressure secures the seal. The closure cap is dome-shaped to facilitate the filling process and shield the working parts of the assembly.

3,706,167

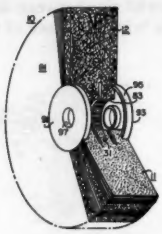
FINISHING APPARATUS

Rober D. Schaffner, Pittsburgh, Pa., assignor to Schaffner Manufacturing Co., Inc.,, Pittsburgh, Pa.

Filed Oct. 13, 1970, Ser. No. 80,375
Int. Cl. B24b 9/02; B24d 11/00
U.S. Cl. 51—334 3 Claims

There is disclosed a work-finishing wheel including an annulus of flaps bonded near the center to form a substantially solid

hub in which flaps of woven abrasive web or fabric are interleaved with flaps of non-woven fibrous abrasive web or fabric



of the material disclosed in Hoover et al. U.S. Pat. No. 2,958,593.

3,706,168

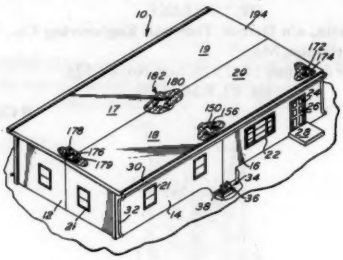
PREFABRICATED BUILDINGS

Andre Pilish, Wyncote, Pa., assignor to The Pennstar Company, Warminster, Pa.

Filed Sept. 15, 1970, Ser. No. 72,467

Int. Cl. E04b *2/00*

U.S. Cl. 52—234 **4 Claims**



A prefabricated reinforced concrete building is disclosed, wherein pre-cast separate footings are spaced in an arrangement defining the floor plan of the building, and pre-cast wall-forming panels, disposed in edge-abutting relation, are supported by the footings. Roof-forming panels overlie the upper edges of the wall-forming panels. The abutting wall-forming and overlying roof-forming panels are interconnected by parallel upwardly extending studs, anchored in adjacent abutting portions of the wall-forming panels, and extending successively through a first apertured tie plate overlying upper edge portions of the wall-forming panels; the roof-forming panels; and a second tie plate overlying the roof-forming panels. The studs and tie plates are embedded in cast in situ concrete, so that the roof and wall-forming panels form a monolithic membrane.

3,706,169

BUILDING-FRAME STRUCTURE

Eberhard G. Rensch, Lerchesbergring 24, Frankfurt/Main, Germany

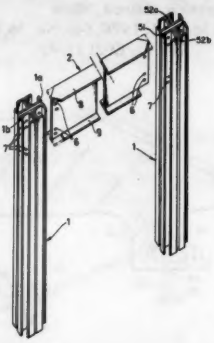
Filed June 9, 1970, Ser. No. 44,848

Claims priority, application Germany, June 9, 1969, P 19 29 175.9; March 10, 1970, P 20 11 258.7

Int. Cl. E04c *3/32*; E04b *1/24*

U.S. Cl. 52—263 **9 Claims**

A building-frame structure is assembled from prefabricated columns and girders or beams forming a horizontal grid, each of the columns being composed of two or more parallel uprights forming vertical channels therebetween to receive the webs of the beams. Profiled connectors, with ribs of the same width as the beams, can also be clamped between these



uprights to secure the column to a wall consisting of one or more framed panels onto which the connector can be clipped.

3,706,170

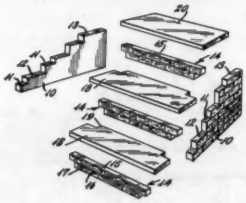
PREFABRICATED PLASTIC STAIRWAY AND METHOD OF MANUFACTURE

Neil E. Argraves, 154 Brady Ave., Salem, N.H., and David A. Mann, 12 Burnell Drive, Yarmouth, Maine

Filed July 14, 1970, Ser. No. 54,711

Int. Cl. E04f *11/14, 11/00*

U.S. Cl. 52—189 **4 Claims**



This invention is a prefabricated molded or precast stairway and method of making the same and with such structure having a facing representing brick, stone or other desired ornamental finish.

3,706,171

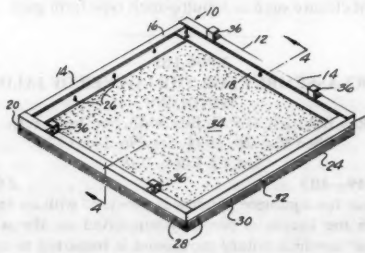
DECORATIVE ACOUSTICAL CEILING PANEL

Harry I. Shayman, 777 North Michigan Avenue, Chicago, Ill.

Filed April 2, 1971, Ser. No. 130,611

Int. Cl. E04b *5/52*; E04c *2/38*

U.S. Cl. 52—475 **6 Claims**



A decorative acoustical ceiling panel which, when assembled with other like panels in edge-to-edge relation in a suita-

ble ceiling installation, provides the appearance of a blanket of carpeting covering the ceiling. The panel comprises a rigid rectangular frame member having a rectangular layer of carpeting material fastened to its lower surface so as to form a facing thereover. Mounting means in the form of hook members are fastened to the upper surface of the frame member for mounting the panel on support members suspended from a ceiling.

3,706,172

FOAM LAMINATES

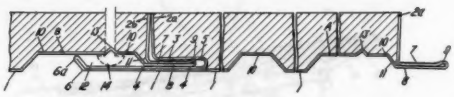
Donald George Keith, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Aug. 5, 1970, Ser. No. 61,050

Claims priority, application Great Britain, Aug. 21, 1969, 41,845/69

Int. Cl. E04c *1/10, 2/10*

U.S. Cl. 52—521 **3 Claims**



A foam laminate, the lower facing sheet is a preformed metal pan with sharp vertical edges, two opposite edges of the pan being shaped, near the foot thereof, one as an outwardly-extending and the other as a co-operating inwardly-extending hairpin bend such that, when a pair of pans are to be connected, the hairpin bends form a snap-fit with each other.

3,706,173

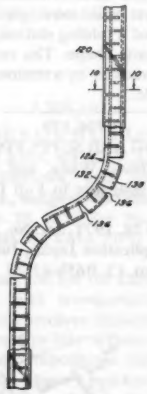
FLEXIBLE MOLDING STRIP AND METHOD OF MAKING SAME

Alfred E. Taylor, 686 Rivard Boulevard, Grosse Pointe, Mich.

Continuation-in-part of Ser. No. 850,434, Aug. 15, 1969, abandoned. This application Jan. 10, 1972, Ser. No. 216,409

Int. Cl. E06b *7/16*

U.S. Cl. 52—716 **9 Claims**



A flexible molding strip including a non-metal channel-shaped core member having a plurality of transverse slots providing the requisite molding flexibility, and a stretchable cover enclosing the core member and concealing the slots. The core member includes opposed gripping flanges within the channel adapted to secure the molding, and the cover may be stretched over the core to prevent buckling when the molding is secured over a relatively sharp radius. The cover may also include a laterally extending flange or wing to conceal a joint or the like.

3,706,174

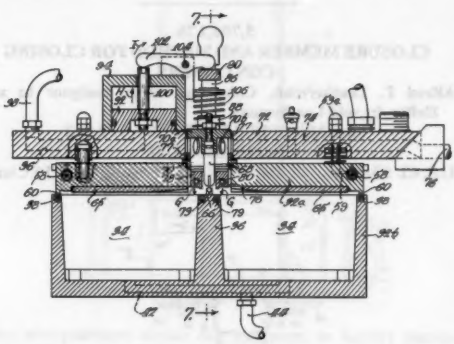
PACKAGING MACHINE AND METHOD OF FORMING PACKAGES

William E. Young, Stamford, Conn., and Arthur D. Jezuit, Wood Dale, Ill., assignors to W. R. Grace & Co., Duncan, S.C. and John Morrell & Co., Chicago, Ill.

Filed March 3, 1971, Ser. No. 120,512

Int. Cl. B65b *31/02*

U.S. Cl. 53—112 R **7 Claims**



A machine and method for evacuating sealed packages formed from flexible sheet material which may be heat sealed, and for sealing the package. A heat-sealing device has two sections disposed opposite each other and movable toward each other to seal two sheets of the flexible material together to form a sealed package. One of the sections comprises a suction head for applying vacuum to one of the sheets of flexible material to cause the one sheet to move toward a knife member fixedly secured in the suction head to form a pierced opening in the one sheet through which air is exhausted from the package through the pierced opening. A heat-sealing member is disposed in and reciprocable in the suction head for movement between a retracted position and an extended sealing position. The heat-sealing member is adapted to heat seal the sheets together in an area surrounding the pierced opening when in its extended position. In the preferred form of the invention, the other section of the heat-sealing device also comprises a vacuum head for applying suction to the other sheet of flexible material to grip the other sheet while the one sheet is being pierced and the air is evacuated from the package.

3,706,175

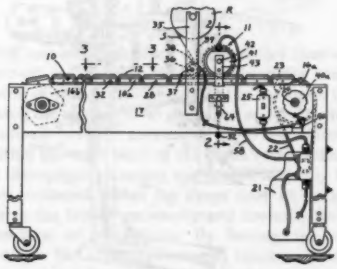
METHOD AND APPARATUS FOR CLOSING CONTAINERS

Ralph F. Anderson, 332 Calvin Park Boulevard, Rockford, Ill.

Filed Oct. 31, 1969, Ser. No. 873,032

Int. Cl. B65b *7/28*

U.S. Cl. 53—39 **16 Claims**



A method and apparatus for applying a cover from a continuous strip to rim top containers as they are advanced by a

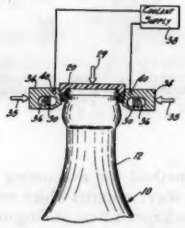
conveyor, in which the cover strip is progressively sealed to a container rim as it is advanced and the cover strip is then severed at the trail side of a sealed container before being sealed to the next succeeding container. The cover strip advances with the container while it is being sealed thereto and advance of the cover strip with the container is interrupted after it is severed from the sealed container, until the next succeeding container is advanced to a position adjacent the severed end of the cover strip.

3,706,176

CLOSURE MEMBER AND METHOD FOR CLOSING CONTAINERS

Alfred F. Leatherman, Columbus, Ohio, assignor to said Heller, by said Leatherman

Filed March 10, 1971, Ser. No. 122,762
Int. Cl. B65b *7/28*
U.S. Cl. 53—42 **16 Claims**



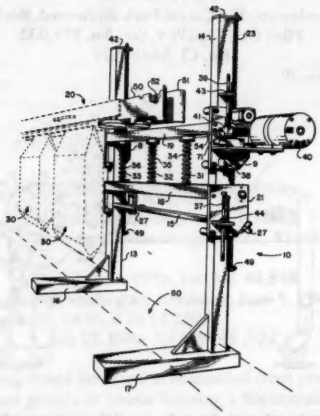
A technique for capping a container utilizes a thermoplastic cap having integral means for heating portions thereof by means of a high frequency magnetic field. The steps of the method include placing the cap on the container, subjecting the heatable portions of the cap to a high frequency magnetic field to soften these portions, bringing the softened portions of the cap into engagement with the container, and cooling the cap to removably affix the cap to the container.

3,706,177

AUTOMATIC BAG CLOSING MACHINE

George L. Willett, Gretna, La., assignor to Westvaco Corporation, New York, N.Y.

Filed March 18, 1971, Ser. No. 125,616
Int. Cl. B65b *57/00*
U.S. Cl. 53—76 **4 Claims**



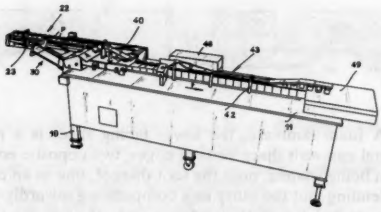
Pinch-style multi-wall bags are sealed with an automatic bag closing machine wherein the sealing unit is mounted on a framework which permits up and down movement thereof. The sealing unit is resiliently mounted to move in a vertical plane so as to accommodate bags of slightly varying height. A mechanically driven gear system is employed for orienting the sealing unit, and an electronic sensing device is arranged for sensing the presence of a bag to be sealed and for triggering the movement of the sealing unit to the proper bag height.

3,706,178

MACHINE FOR THE PACKAGING OF OBJECTS

Pierre Lucien Antoine Magnard, Issoudun, and Lemaitre, Andre Jules Emile, Bezons, both of France, assignors to The Mead-Corporation, Dayton, Ohio

Filed June 10, 1970, Ser. No. 44,958
Claims priority, application France, June 13, 1969, 6919714
Int. Cl. B65b *61/14, 57/16*
U.S. Cl. 53—131 **10 Claims**



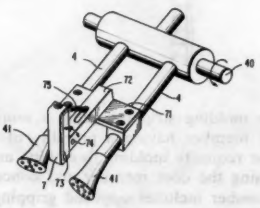
A packaging machine for assembling yogurt containers into two-packs includes an endless conveyor belt formed from hinged platelets some of which are integral with upstanding C-shaped brackets having perforated flanges parallel to and spaced from the conveyor surface. Cardboard blanks with foldable sections, designed to form a prismatic envelope for the beaded tops of a pair of containers, have one section provided with two holes which in a feeding operation come to register with respective perforations of two brackets supporting a blank. Two containers are then inserted into these holes from above, with the assistance of an overhanging inclined strip, so as to hang down by their beads into the spaces surrounded by the brackets while moving with the conveyor belt past a gluing station and a folding station, the latter imparting to the blank its prismatic shape. The resulting packages are cammed out of their brackets by a stationary ramp for deposition on a receiving table.

3,706,179

BAG OPENING AND SUPPLYING DEVICE

Hiroshisa Tanaka; Mitiaki Wada, and Keijo Kaneko, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed June 28, 1971, Ser. No. 157,526
Claims priority, application Japan, June 30, 1970, 45/57053
Int. Cl. B65b *43/28*
U.S. Cl. 53—188 **6 Claims**



A bag opening and supplying device comprising a hopper for storing bags therein in stacked relation, movable suction pipes for removing bags one-by-one from the hopper by suction, and a bag receiving bracket to which the bags are sup-

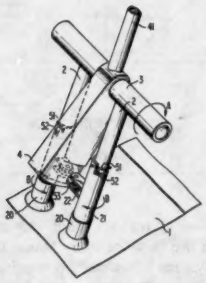
plied by the suction pipes. A friction member is provided between the pipes for engaging a bag carried by the pipes and insuring that it is accurately positioned without slippage on the bag receiving bracket.

3,706,180

BAG OPENING DEVICE

Keiji Kaneko; Kitimaru Shoji, and Minoru Mukai, all of Minami Ashigara, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed June 30, 1971, Ser. No. 158,323
Claims priority, application Japan, June 30, 1970, 45/57054
Int. Cl. B65b *43/28*
U.S. Cl. 53—386 10 Claims



A bag opening device comprising a pair of suction heads adapted to engage a portion of a bag from one side thereof and to twist the bag to open the mouth thereof when the heads are moved in opposite directions. The suction heads are movably mounted on the ends of a pair of suction arms and are positioned to engage a cam member to effect the opposite movement of the heads in response to predetermined movement of the suction arms. The suction heads may be mounted on the suction arms for rotatable or reciprocatory movement relation thereto.

3,706,181

PROCESS FOR THE SAFE HANDLING OF C_3 AND C_4 ACETYLENIC HYDROCARBONS

David G. Walker, Baytown, and Donald A. Keyworth, Houston, both of Tex., assignors to Tenneco Chemicals, Inc.

Filed Nov. 20, 1970, Ser. No. 91,567
Int. Cl. B01d *53/02*
U.S. Cl. 55—63 18 Claims

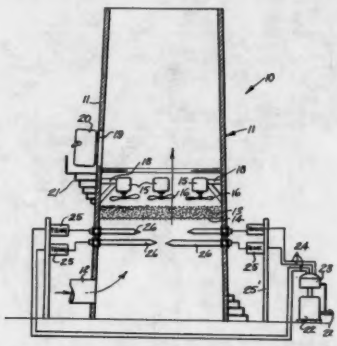
An improved safe method for the handling, concentration, purification, storage, and transportation of C_3 and C_4 acetylenic hydrocarbons involves contacting a gas stream that contains 10 mole percent or less of these compounds with activated carbon to form compositions that comprise activated carbon on whose surface about 2 percent to 10 percent, based on the weight of the carbon, of C_3 and/or C_4 acetylenic compounds have been adsorbed. These activated carbon compositions, which are air stable and which cannot be detonated, can be handled, stored and transported without appreciable danger of explosion. Concentrated and purified acetylenic compounds can be recovered by stripping the carbon with, for example, a nitrogen-methylene chloride mixture. Further improvement in the safety of the method results when the pyrolysis gas is diluted with an inert, non-explosive gas that has carbon adsorption characteristics similar to those of the C_4 acetylenic compounds prior to the treatment of the activated carbon with the pyrolysis gas stream.

3,706,182

ANTI-POLLUTION APPARATUS

Ray Sargent, P.O. Box 234, Hardin, Mont.

Filed Dec. 2, 1970, Ser. No. 94,242
Int. Cl. B03c *3/14*
U.S. Cl. 55—124 4 Claims



An anti-pollution device for insulation in factory smoke stacks. This device includes a charcoal filter through which the smoke is pulled by fan blades.

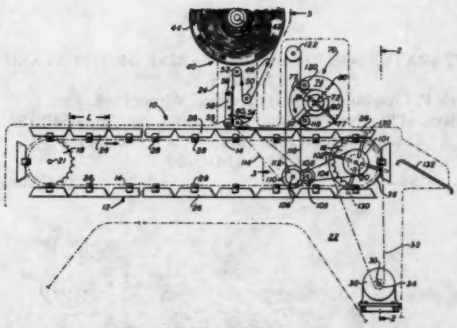
The device also includes high voltage electrodes for producing an arc from point to point which is accomplished by a distributor.

3,706,183

ROTARY HEAT-SEALING AND CUT-OFF MECHANISM

Lawrence J. Talarico, Deal, N.J., assignor to Anderson Bros. Mfg. Co., Rockford, Ill.

Filed Oct. 22, 1969, Ser. No. 868,537
Int. Cl. B65b *7/28*
U.S. Cl. 53—329 7 Claims



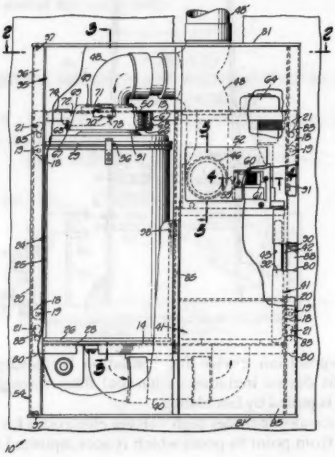
A packaging machine that has a unique rotary heat-sealing drum and cut-off mechanism within the drum for sealing a continuous web of thermoplastic material to the open tops of trays containing the articles to be packaged and for cutting off the web selectively between successive trays. A reciprocating cam shaft within the axial bore of the drum's axle selectively engages and disengages a caming surface on inwardly biased cut-off blades mounted within the drum near its peripheral surface to drive the blades outwardly and inwardly from the peripheral surface of the drum. By having the cut-off mechanism within the sealing drum, the continuous web of thermoplastic material being fed to the sealing drum can be cut off prior to being sealed to the tops of the open trays so that the continuous web can be controlled and registered independently of any influence of the sealing drum on the web.

3,706,184

WALL-RECESSED SUCTION CLEANER

Council A. Tucker, Glendale, Calif., assignor to Matter Mfg. Corp., Temple City, Calif.

Filed June 9, 1969, Ser. No. 831,456
Int. Cl. B01d *46/02*
U.S. Cl. 55—356 32 Claims



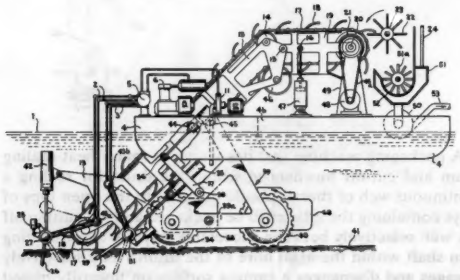
A suction cleaner mountable substantially entirely between the faces of a room wall and equipped to have a dirty air suction hose coupled thereto and to discharge clean air back into the room from a semi-concealed outlet discharging laterally from a protruding edge of the cleaner and generally across the adjacent face of the room wall. The exterior cover means for the working components is detachably secured in place by hidden connectors and conceals the cleaner proper from view. The suction air unit is mounted beside and parallel to an air filter canister which is removable as a unit for servicing.

3,706,185

APPARATUS FOR REMOVING MARINE GROWTHS AND ROOTS

Merle P. Chaplin, 609 Driver Avenue, Winter Park, Fla.

Division of Ser. No. 764,586, Oct. 2, 1968, Pat. No. 3,540,194.
This application June 23, 1970, Ser. No. 59,830
Int. Cl. A01d *45/08*
U.S. Cl. 56—9 10 Claims



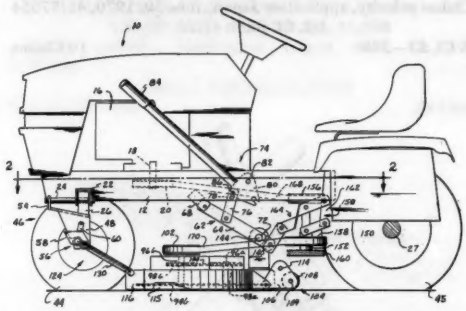
Apparatus for removing weeds and plants from the bottoms of lakes and waterways, involving injecting water and subsequently compressed air directly below the root systems of such plants, thus forcing them away from the bottom of the lake or waterway. A preferred embodiment of my invention involves a conveyor utilized in concert with this fluid pressure injection, which enables the removed plants to be carried to the surface of the water and disposed of, instead of leaving portions of the uprooted plants in the water to decay.

3,706,186

SUSPENSION SYSTEM FOR A MOWER UNIT

Joseph C. Hurlburt, Leola, and John H. Freimuth, New Holland, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed July 7, 1971, Ser. No. 160,288
Int. Cl. A01d *35/26*
U.S. Cl. 56—15.8 11 Claims



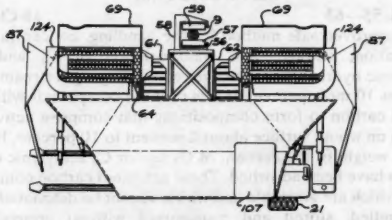
A mower suspension system for tractively coupling a rotary mower unit beneath the belly or main frame of a tractor. The mower suspension system is basically comprised of a generally parallel four bar linkage arrangement including a front draft linkage interconnecting a front pivotal axle of the tractor with a front portion of the mower unit and a rear lift link pivotally interconnecting an intermediate portion of the tractor chassis structure with a rear portion of the mower unit. Further provided is a ball joint attaching assembly within the rear lift linkage structure which enables the mower unit to tilt from side to side in response to movement over ground irregularities of ground engaging rollers disposed rearwardly on the mower unit and the front wheels, and yet maintain the mower unit in a plane generally parallel to the chassis when the axle and associated front wheels are disposed on generally level ground terrain.

3,706,187

HARVESTING MACHINE ESPECIALLY FOR TREE FRUITS

Gary M. Toet, 1470 Wendell Way, Yuba City, Calif.

Filed Sept. 2, 1971, Ser. No. 177,248
Int. Cl. A01g *19/06*
U.S. Cl. 56—329 29 Claims



A harvesting machine especially for tree fruits has a mobile carriage including a main frame adapted to be driven alongside a tree trunk so that a shaker on the frame can engage the trunk. The main frame is adapted to pick up, hold and discharge a fruit bulk bin. A catching frame overlies the main frame and extends under one side of the tree branches. A pair of subframes are swung on pivots on the main frame from

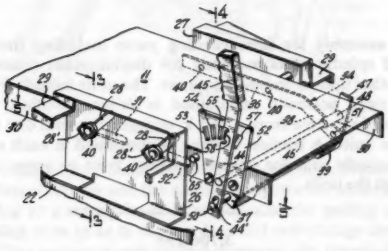
retracted position to extended position on opposite sides of the tree trunk. Support arms pivotally mounted on the subframes carry flexible catching wings adapted to supplement the catching frame and to extend from retracted position to extended position underlying the remaining branches of the tree. Fruit falling onto the catching frame and catching wings when the shaker operates is led to a conveyor system carrying the fruit to the bulk bin.

3,706,188

ELEVATING APPARATUS FOR TRACTOR ATTACHMENTS

Ronald G. Quiram, Michigan City, Ind., assignor to Poloron Products of Indiana, Inc., New Rochelle, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,546
Int. Cl. A01d *35/25*
U.S. Cl. 56—11.6 **11 Claims**



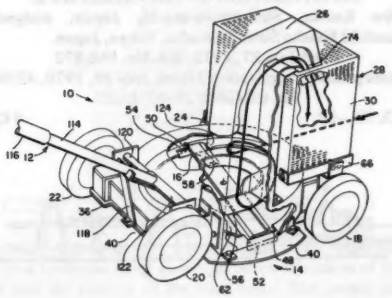
An elevating mechanism for tractor attachments such as mowing apparatus which includes a pair of vertically disposed plates secured to the attachment and having inclined slots engaged by pins carried by the tractor so that as the pins are displaced longitudinally the attachment carried by the plates will be displaced vertically.

3,706,189

SAFETY MOWER AND LEAF HARVESTER-MULCHER

Harry T. Rutherford, 1123 Wood Heights Avenue, Baltimore, Md.

Continuation-in-part of Ser. No. 173,469, Aug. 20, 1971, Pat. No. 3,680,295. This application Feb. 4, 1972, Ser. No. 223,680
Int. Cl. A01d *87/10*
U.S. Cl. 56—13.4 **6 Claims**



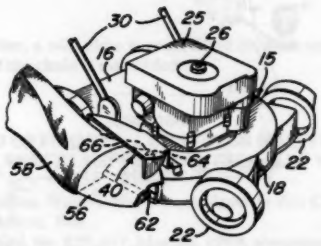
A combined rotary mower and leaf harvester and mulcher having a special 180° baffle fixed circumferentially around the blade axis to direct airflow for mulching and a deflector plate for upward discharge through a gooseneck chute which exhausts downwardly into a deck-mounted porous collector; coacting safety features include an unbroken 360° guard skirt in the plane of the blade and a lower plate concealing the tips of the blade except at flange-protected lateral slots which allow full-width cut; height control is adjustable and the front can be raised independently of the rear for leaf cutting by the height control mechanism; a safety adapter for non-collecting mowing is also provided.

3,706,190

ROTARY POWER MOWER HAVING AN IMPROVED DEFLECTOR FOR THE DISCHARGE OUTLET

Jack D. Taub, New York, N.Y., assignor to G. W. Davis Corporation, Richmond, Ind.

Filed Oct. 20, 1971, Ser. No. 190,727
Int. Cl. A01d *35/26*
U.S. Cl. 56—13.4 **9 Claims**



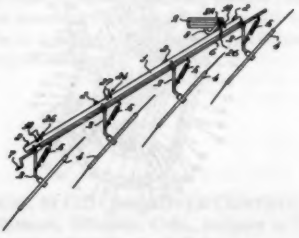
The deck member of a rotary power mower has a grass discharge outlet which is normally covered by a scoop-like deflector member for directing grass clippings, stones and other solid objects back onto the ground outboard of the wheels supporting the deck member. The upper portion of the deflector member is pivotally connected to the deck member adjacent the top of the discharge outlet, and the deflector member is movable from its lower operative position covering the outlet to an upper retracted or inoperative position against the bias of torsion coil springs to provide for attaching a grass catcher bag adapter directly to the deck member. The deflector member includes front and rear curved walls which are rigidly connected by an outer wall sloping downwardly and outwardly from the top of the discharge outlet, and the lower edges of the walls are substantially level with the lower edge of the deck member.

3,706,191

RAKING IMPLEMENTS

Claude Barbot, Senonches, France, assignor to C. van der Lely C., N.V., Maasland, Netherlands

Filed March 22, 1971, Ser. No. 126,703
Claims priority, application Netherlands, March 20, 1970, 7003965
Int. Cl. A01d *77/06*
U.S. Cl. 56—377 **15 Claims**

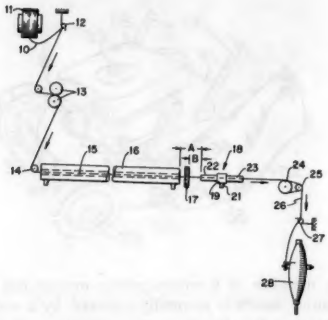


A raking implement for attachment to a prime mover to displace crop lying on the ground, has an inclined main frame beam and a plurality of rotatable rake wheels mounted on the frame beam. The main frame beam has different coupling points for other frame parts to be releasably connected thereto so that the implement can be converted to different types of rakes.

3,706,192
PROCESS AND APPARATUS FOR FALSE TWISTING SYNTHETIC YARNS

Bertus Leibbrand, Elst; Johan J. Mertens, Rozendaal; Harm A. Ploeger, Arnhem; Robert Sluijters, Arnhem, and Leendert van Assendelft, Arnhem, all of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed Oct. 8, 1970, Ser. No. 79,231
Claims priority, application Netherlands, Oct. 14, 1969, 6915479; Oct. 14, 1969, 6915480; Oct. 14, 1969, 6915481; Oct. 14, 1969, 6915482
Int. Cl. D02g *1/16, 1/02*
U.S. Cl. 57—34 HS 11 Claims

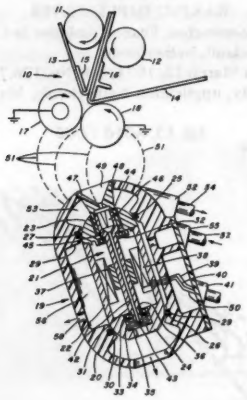


A system is provided to false twist and simultaneously draw a linear synthetic high polymer yarn. The yarn is first heated and then false twisted in a novel false twister wherein the diameter of the twisting chamber is considerably greater than the yarn feeding and discharge channels.

3,706,193
SPINNING HEAD

Richard A. Amato, Bolton, Mass., assignor to Electrospin Corporation

Filed April 19, 1971, Ser. No. 135,320
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.89 2 Claims

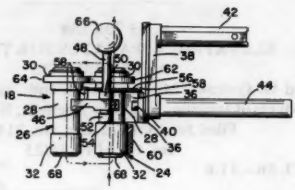


A spinning head for textile yarn spinning apparatus of the electrostatic type having a high voltage electrode for producing, in conjunction with a cooperating electrode, an electrostatic field by which textile fibers are transported from a fiber source to the spinning head and having integral electrical driving means for rotating a spindle and yarn forming gripper carried therein which receive the fibers and twists them into yarn.

3,706,194
APPARATUS FOR IMPARTING FALSE TWIST TO YARN

Joseph F. Smith, Greensboro, N.C., assignor to Pem-Ims, Inc., Greensboro, N.C.

Filed Aug. 6, 1970, Ser. No. 61,536
Int. Cl. D02g *1/04*
U.S. Cl. 57—77.45 10 Claims



An assembly for false twisting yarns including first and second spindle units mounted for displacement relative to each other upon a common support. The units include friction drive rings normally maintained in driving relation which receive their drive from a belt in engagement with one of the spindle units. A friction bushing is positioned in each end of each spindle unit for applying a false twist to yarns drawn through the units.

3,706,195
SYNTHETIC YARNS

Anthony Charles Davis, and Brian Franklin Amos, both of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England

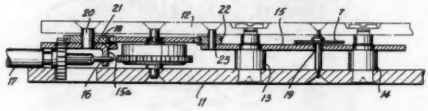
Filed Feb. 8, 1971, Ser. No. 113,661
Claims priority, application Great Britain, Feb. 13, 1970, 7,102/70
Int. Cl. D02g *3/04, 3/44*
U.S. Cl. 57—140 BY 5 Claims

A blended fibrous structure comprising synthetic filaments or fibers having a high electrical resistance together with extruded synthetic polyester or polyamide filament, having an extension to break of at least 200 percent, containing between 5 to 20 percent by weight inclusive of conductive carbon black.

3,706,196
CONSTURCTION OF THIN TIMEPIECE

Hirohisa Kurita, Shimosuwa-machi, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed July 27, 1971, Ser. No. 166,372
Claims priority, application Japan, July 29, 1970, 45/66016
Int. Cl. G04b *29/00, 33/00*
U.S. Cl. 58—52 4 Claims



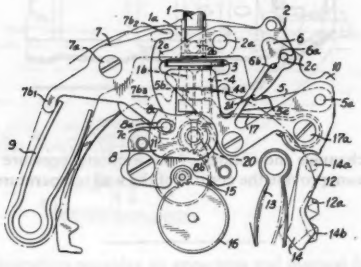
Two bridges of thin sheet material are spaced apart by means of pillars having a plurality of shoulders. A third sheet member is held intermediate the two sheet members by means of shoulders on the pillars. A portion of the intermediate sheet member is turned at right angles to the remainder of the sheet and is apertured for reception of the stem. The intermediate sheet member also serves to hold in place gears between the third sheet member and one of the two bridge members during emplacement of the other bridge sheet member on the pillars.

3,706,197

DATE CORRECTING DEVICE FOR WRIST WATCHES

Elichi Matsura, Chiba-shi, Chiba, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed June 14, 1971, Ser. No. 152,834
Claims priority, application Japan, June 20, 1970, 45/60760
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 5 Claims



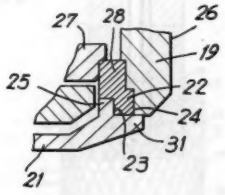
A wrist watch comprising a date correcting device wherein the first corrector and the second corrector are rotated by the turning of a setting lever in response to the pulling out of a winding stem so as to drive a date dial and change dates, and said first corrector and second corrector are returned by the force of a date corrector spring when said winding stem is released.

3,706,198

SEALING STRUCTURE IN A WATERPROOF WATCH

Takekazu Fukushima, Kamiina-gun, Nagano-ken, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Nov. 24, 1971, Ser. No. 203,111
Claims priority, application Japan, Nov. 28, 1970, 45/117721; Nov. 28, 1970, 45/117722
Int. Cl. G04b *37/08*
U.S. Cl. 58—90 R 1 Claim



A water-tight seal in a watch results from radial compression of a synthetic resin gasket between a portion of the case-back and the interior of the case-body. The gasket may also serve to mount the watch mechanism within the case-body.

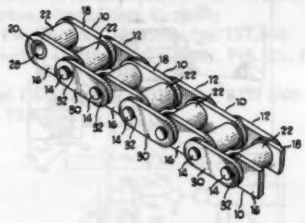
3,706,199

MANUFACTURE OF ROLLER CHAIN

George A. Zimmer, Ithaca, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 30, 1971, Ser. No. 158,199
Int. Cl. B21l *9/02*
U.S. Cl. 59—8 5 Claims

To improve retention of the cylindrical bushings in the side plates of a roller chain, the bushing surfaces are roughened, as by shot-peening, fine knurling or fine scoring, prior to harden-



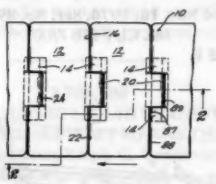
ing. Thereafter, a side plate is press fitted on each end of the bushing, and the chain is assembled.

3,706,200

METHOD OF FORMING A CONVEYOR CHAIN LINK HAVING KNUCKLES FORMED INTEGRALLY WITH EDGE

Clair W. Mueller, Wauwatosa, Wis., assignor to Rex Chainbelt Inc., Milwaukee, Wis.

Division of Ser. No. 827,677, May 26, 1969, abandoned. This application June 21, 1971, Ser. No. 155,317
Int. Cl. B21l *11/00*
U.S. Cl. 59—35 6 Claims



A flat top metal conveyor chain link is formed with the curled knuckles of one edge extending a short distance into the flat body of the link. The remainder of the one edge outwardly of the knuckles is swaged to a rounded form corresponding to the portion of the knuckles integral with the link body. The opposite edge is beveled or undercut to allow adjacent connected links to overlap slightly and interfit more closely. The cold working of the metal by swaging produces localized increases in strength allowing relative changes in the widths of the knuckles on respectively opposite edges of the link, whereby an increase in the ultimate and fatigue strengths of the link may be attained.

3,706,201

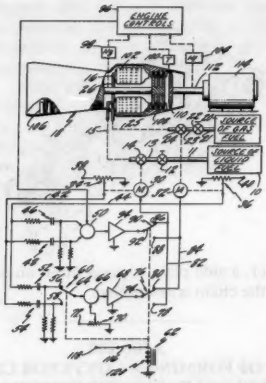
DUAL FLUID CROSSOVER CONTROL

John S. Williamson, Ellington, Colo., assignor to United Aircraft Corporation, East Hartford, Colo.

Division of Ser. No. 711,754, Jan. 12, 1970, Pat. No. 3,517,679. This application Jan. 12, 1970, Ser. No. 7,427
Int. Cl. F02c *9/04*
U.S. Cl. 60—39.28 R 3 Claims

A dual manifold gas turbine operates on either gaseous fuel or liquid fuel supplied thereto through respective servocontrol valves, the valve relating to fuel in use being controlled by

operating conditions of the engine through a servoloop. To change from one fuel to the other, the oncoming valve is controlled by the operating servoloop which has as one input the closing of the offgoing valve. The offgoing valve is closed by a special servoloop used only for that purpose.

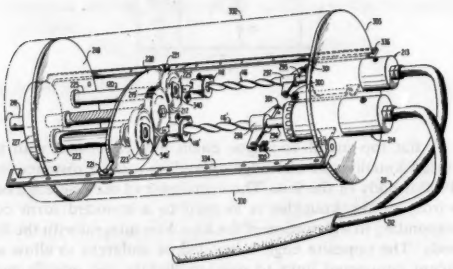


3,706,202

MANUALLY OPERATED FLUID PRESSURE DRIVEN ROTARY DRIVE

Napoleon A. Basa, 46 Cordillers Street, Quezon City, Philippines

Filed Nov. 16, 1970, Ser. No. 89,760
Int. Cl. F15b 7/00
U.S. Cl. 60—54.5 R **5 Claims**



Manually operated single or multiple fluid motors for generating fluid pressure and driving a reciprocating servo motor having a screw like reciprocating force transmitting element and a rotary power take off member connected to a coupler or transmission for use as an auxiliary or primary drive for various work devices.

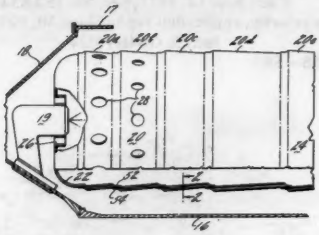
3,706,203

WALL STRUCTURE FOR A GAS TURBINE ENGINE

Perry Goldberg, West Hartford, and Irwin Segalman, Bloomfield, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation-in-part of Ser. No. 812,793, April 2, 1969, abandoned. This application Oct. 30, 1970, Ser. No. 85,629
Int. Cl. F02c 7/18
U.S. Cl. 60—39.65 **4 Claims**

A combustion wall or liner construction which utilizes a unique geometry, primarily a plurality of flow channels with predetermined length-to-diameter ratio which are positioned between the walls of the liner, to maintain the liner wall at an acceptable operating temperature. Cooling air flows through the flow channels and control of the frictional pressure losses of this stream provide the control of the wall temperature.



ERRATUM

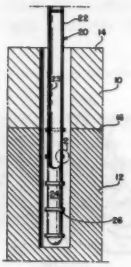
For Class 61—36 see:
Patent No. 3,706,581

3,706,204

METHOD AND APPARATUS FOR IMPROVING BEARING STRENGTH OF PILES IN PERMAFROST

Erwin L. Long, 5741 College Drive, Anchorage, Alaska

Filed Feb. 10, 1971, Ser. No. 114,258
Int. Cl. E02d 3/12, 5/48, 27/30
U.S. Cl. 61—46 **4 Claims**



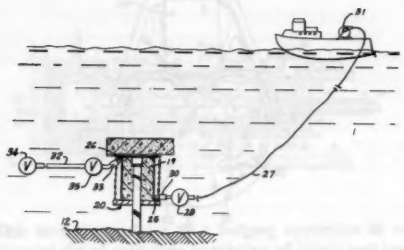
A pile has a lower portion insertible into the permafrost or permanently frozen region of the soil, an intermediate portion extending through the seasonal frost or seasonal-thaw region and an upper portion exposed to the atmosphere above the soil. The lower portion is provided with cylindrical or segmented cylindrical rings which extend radially outwardly beyond the surface of the pile. The piles are used in a method of improving the bearing strength of the pile by inserting into a hole down into the permanently frozen region a pile having laterally extending rings or segments of rings on its lower portion below the seasonal-thaw region and then filling the hole surrounding the pile with fill material which eventually freezes and becomes an integral part of the permafrost soil surrounding the hole.

3,706,205

APPARATUS AND METHOD OF MAKING AN UNDERWATER CONNECTION BETWEEN A STRUCTURAL MEMBER AND A SUPPORTING PILE

Ernst A. Wald, Dallas, Tex., and Joseph J. Dodson, Jr., Robert, La., assignors to U.S. Industries, Inc., New York, N.Y.

Filed March 4, 1971, Ser. No. 120,879
Int. Cl. E02d *5/40, 5/50*
U.S. Cl. 61—46 12 Claims



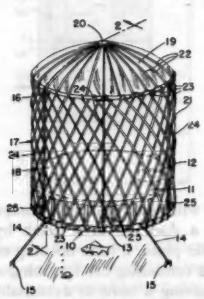
This invention provides an apparatus and method for making underwater connections between structural members and a plurality of supporting piles. The piles are driven to elevations equal to or below design elevation. A spacer is mounted on the top of any pile that is below design elevation to distribute the load of a structural member among the piles and to support the member at design elevation. Hollow form members having openings are mounted on the underside of the structural member so that the piles will extend into the openings when the structural member is lowered onto the piles. The openings in the form members are sufficiently large to accommodate substantial horizontal displacement of the upper end of the pile thereby allowing the piles to be driven to less stringent tolerance. The space in each opening between each form member and each pile is filled with cement to connect the structural member to the piles.

3,706,206

LIGHTWEIGHT READILY PORTABLE UNDERWATER HABITATION AND METHOD OF ASSEMBLY AND EMPLACEMENT

James F. Clark, 132 South Shore Drive, Toms River, N.J.

Filed Jan. 27, 1971, Ser. No. 110,195
Int. Cl. B63c *11/00*
U.S. Cl. 61—69 R 14 Claims



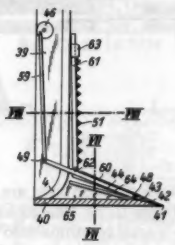
A lightweight readily portable underwater habitation features a rigid base frame for anchorage to natural ballast and a largely transparent flexible thin-walled inflatable body portion forming the main enclosure of the habitation. The inflatable body portion is two layered, including a transparent film and an overlay of reinforcing mesh which relieves stresses on the film and imparts the requisite strength to the flexible body portion. The habitation may embody a basic module or plural interconnected modules.

3,706,207

APPARATUS FOR BURYING A PLASTIC DRAINAGE PIPE LINE IN THE GROUND

Werner Cornelius, and Friedrich Kaminski, both of Nordhastedt, Germany, assignors to Werner Cornelius KG, Tief- und Kulturbau, Nordhastedt, Germany

Filed Feb. 22, 1971, Ser. No. 117,506
Claims priority, application Germany, Feb. 26, 1970, P 20 08 995.6
Int. Cl. E02f *5/02*; A01b *3/64*; F16l *1/00*
U.S. Cl. 61—72.6 13 Claims



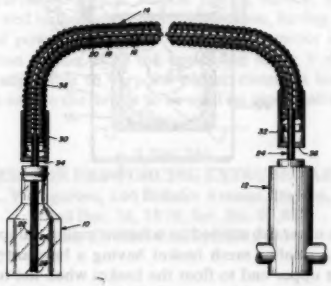
The apparatus comprises a coulter with a guide passage for the pipe extending therein from an opening in the upper part thereof to its rear edge and a nose projecting from the lower section of the coulter front edge. The nose is provided with a roof-like oscillatory edge member sloping upwardly from the nose peak to the coulter front edge. The apparatus suspended at a tractor and engaging the ground with its lower section can be dragged with a smaller tractor output or with higher speeds than similar tools without an oscillatory nose edge member.

3,706,208

FLEXIBLE CRYOGENIC LIQUID TRANSFER SYSTEM AND IMPROVED SUPPORT MEANS THEREFOR

Frank J. Kadi, Bethlehem; Ralph C. Longsworth, Allentown, and Richard N. Meier, Macungie, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 13, 1971, Ser. No. 106,167
Int. Cl. F25d *25/10*
U.S. Cl. 62—55 9 Claims

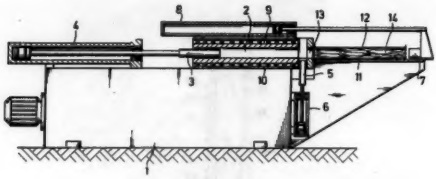


A flexible cryogenic fluid transfer system wherein the fluid conduit is held in spaced relation to the outer flexible hose by an improved support system. The support system is characterized in that a hollow support member surrounding the fluid conduit is provided with a plurality of helicly disposed slotted apertures on its surface. A continuous filament is wrapped around the support member and those portions of the filament in the slotted apertures serve to position and hold the inner fluid conduit.

3,706,209
MEANS FOR PRODUCING DEEP-FROZEN FILLET BLOCKS

Hermann Walter Gehlen, Kaiserslautern/Pfalz; Karl Hartmann, Bremerhaven, and Gerhard Thieme, Kaiserslautern/Pfalz, all of Germany, assignors to Eisenwerke Kaiserslautern GmbH, Kaiserslautern/Pfalz, Germany

Filed Feb. 13, 1969, Ser. No. 798,915
Int. Cl. B30b *15/34*
U.S. Cl. 62—341 4 Claims

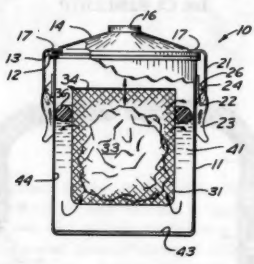


Fillet blocks of fish and other meat are produced by deep-freezing the fresh fillets to be treated and compressing the same while in deep-frozen condition into blocks of predetermined weight and dimension. Apparatus for the carrying into effect the process comprises a deep-cooled compression chamber, a pressure and ejection piston mounted for displacement therein, and a closure piston acting as a closure valve for said chamber, to enable compression of a fillet portion placed in said chamber into a block in the closed position of said closure piston, as well as ejection of the block formed by said pressure piston in the open piston of said closure piston, respectively. A third feeding piston serves to introduce the pre-frozen fillets into the chamber in the open position of the closure piston.

3,706,210
MOBILE WASHING MACHINE

Lester J. Gendron, 106 N. Gateway Drive, Madera, Calif.

Filed Sept. 9, 1971, Ser. No. 161,803
Int. Cl. D06f *35/00*
U.S. Cl. 68—152 6 Claims

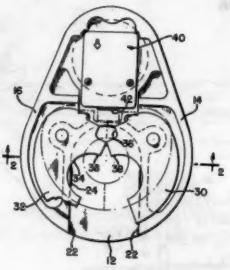


A large outer tub carried on a house trailer, camper or boat contains a smaller mesh basket having a buoyant collar adjacent the upper end to float the basket when the tub is filled nearly to the top with water. Soiled laundry is placed in the basket and after adding to the water a suitable quantity of soap, or the like, the tub lid is tightly closed. As the motor vehicle or boat proceeds on is way, the motion causes the wash water to slosh vigorously. The attendant agitation of the basket relative to the tub and the water which sluices in, through, around and out of the basket effectively dislodges dirt and grime in the laundry. After a few miles, or at its destination, the vehicle or boat can be stopped, the wash water emptied from the tub and the clean contents of the basket removed for drying.

3,706,211
SECURITY DEVICE

Alvin L. Owen, 3244 West Lake Sammamish Parkway N.E., Redmond, Wash., assignor to Alvin L. Owen, Redmond, Wash.

Filed March 4, 1971, Ser. No. 121,073
Int. Cl. B60r *25/00*; F16b *41/00*
U.S. Cl. 70—232 4 Claims

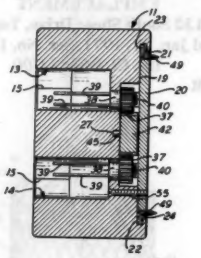


A pair of jaws are mounted in a housing for engagement around the kingpin of a trailer. The jaws when closed may be locked to prevent the removal of the device from the kingpin. The bottom wall of the housing is provided with a guide way to guide the kingpin into engagement with the jaws and the jaws will rest on the head of the kingpin when closed. The housing side walls are deformable to permanently lock the jaws closed if struck by an external force.

3,706,212
LOCK MOUNTED WITH BLIND FASTENERS

Richard E. Middleton, 517 Locust Ave., Hillside, N.J., and Donald Meyer, 26 Willow St., Glen Ridge, N.J.

Filed July 26, 1971, Ser. No. 166,223
Int. Cl. E05b *9/08*
U.S. Cl. 70—369 9 Claims

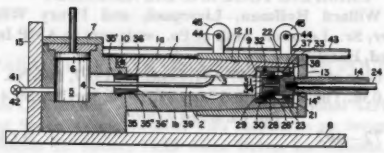


A lock mounted with blind fasteners comprising a mounting plate fastened to a door or door jamb by screws passing through holes in the plate, a lock housing normally covering the mounting plate rendering the fastening screws inaccessable, the housing having a bore to detachably receive a lock core, movable bolt means on the housing operatively connected to the lock core, the bolt means preferably being a flat bar having a rock gear on one edge engaged to a spur gear mounted on the housing and driven by rotation of a first key in the lock core through a pair of connecting pins, the lock core being detachable from the bore in the housing in response to a second key, a second bore in the bottom of the bore in the housing adapted to receive a bolt extending therethrough and engagably in a threaded bore in the mounting plate thereby detachably securing the housing to the plate.

3,706,213
BULGING APPARATUS

Masanobu Nakamura, 2-10-2, Shichirigahama Higashi, Kamakura, Kanagawa, Japan

Filed May 6, 1970, Ser. No. 35,192. The portion of the term of this patent subsequent to Oct. 19, 1988, has been disclaimed.
Int. Cl. B21d 26/04
U.S. Cl. 72—58 6 Claims

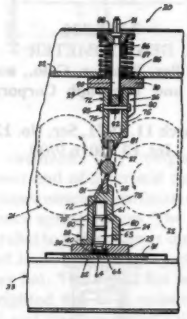


This invention relates to a bulging apparatus in which a horizontal die of split type consisting of upper and lower die members formed with a die cavity inside and tapered on the outside over a certain desirable distance from the front end and which is formed with an inlet port in communication with the piston chamber of hydraulic pressure generating means is associated with an outer cylinder for fastening the die with a tapered hollow adapted to receive the tapered die members together, said outer cylinder being movable horizontally with the axis of the die into and out of engagement with the die body.

3,706,214
ADJUSTABLE GUIDE HOLDER ASSEMBLY

Walter L. Siegerist, Saint Louis, Mo., assignor to Meeco Inc., Saint Louis, Mo.

Filed Nov. 23, 1970, Ser. No. 91,758
Int. Cl. B21b 41/00
U.S. Cl. 72—99 13 Claims

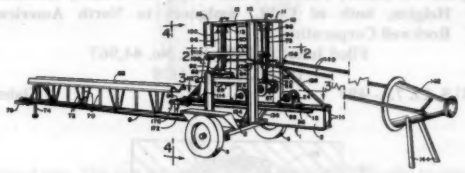


There is disclosed a novel power adjustable guide holder or support for a bar and tube straightening machine. A lower guide holder or support assembly includes an elongated strong base unit comprising a centrally hollow base plate and an integral elongated housing supporting operating parts. A power adjustable cover is disposed over the elongated housing and includes on the top thereof a tapered skewed groove which receives and retains against accidental removal a guide, the upper edge of which is adapted to be engaged by a bar, tube, or the like, being straightened by the machine. The over also prevents scale, coolant, and other foreign matter from falling into and jamming the mechanical operating structure within the guide holder assembly. Hydraulic motors within the housing are selectively actuatable to rotate vertical threaded shafts carrying rider nuts for raising and lowering the ends of the cover to adjust the positions of the retained guides. The elongated base unit is a structural member of sufficient strength to resist the turning forces of a bar as it goes through the machine on top of the guide and yet is narrow enough so that the guide holder does not interfere with the rolls of the machine. The top of the cover is wide enough to permit the skewing of the guide retaining groove, thereby giving additional clearance in respect to the rolls.

3,706,215
ROTARY PIPE STRAIGHTENER

Herbert D. Horton, P.O. Box 6434, Odessa, Tex.

Filed Feb. 19, 1971, Ser. No. 116,767
Int. Cl. B21d 3/04
U.S. Cl. 72—99 9 Claims

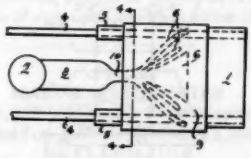


A pipe straightener which utilizes V-shaped upper and lower rollers combined with hydraulic cylinders to apply pressure between alternate V-shaped rollers so as the pipe is moved between the rollers the bends and twists are removed therefrom. By adjusting the top and bottom rollers from a right angle with respect to the pipe up to approximately 45° with the upper rollers being adjusted in opposite angular relation to the lower rollers, pipe may be readily straightened. At least some of the upper rollers and some of the lower rollers are power driven, preferably with hydraulic motors, the conduits of which hydraulic motors are connected in series so that all the rollers will be driven at a uniform speed, with certain rollers being idler rollers. The entire device may be mounted on a structural frame, which in turn is mounted on a trailer axle and may be trailed from place to place, which obviates the necessity of bringing the bent or "cork screwed" pipe to the machine. A V-trough is provided, at one end of the machine, to guide the pipe to and between the rollers and a cone shaped guide is provided at the opposite end for guiding the pipe outward therefrom. The source of hydraulic power is usually furnished by the vehicle towing device, however, a separate and independent hydraulic system, having an outside source of power, may be used, such as a motor or internal combustion engine. Both the upper and lower V-shaped rollers are adjustable to vary the center distances between the rollers to enable the device to be used on pipe of all sizes.

3,706,216
PROCESS FOR REINFORCING EXTRUDED ARTICLES

Joseph L. Weingarten, 144 Bellaire Avenue, Dayton, Ohio

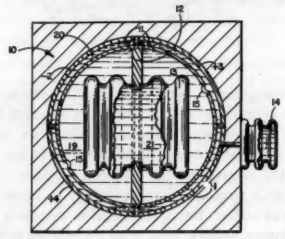
Filed Dec. 16, 1970, Ser. No. 98,812
Int. Cl. B21c 23/22; B29f 3/00
U.S. Cl. 72—258 8 Claims



At least one reinforcing member is introduced into a pressure chamber and, from thence, into an extrusion zone

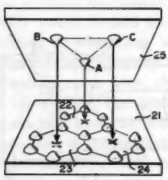
through an entry port communicating between the two. Simultaneously, heated extrudent is delivered, from an extruder, to points around the reinforcing member in the extrusion zone where it encompasses the reinforcing member. Continued pressure from the extruder forces extrudent and the encompassed reinforcing member through a die in the front or downstream end of the extrusion zone. Upon emerging from the die the extrudent cools and sets around the encompassed reinforcing member and a reinforced extruded article is the result. The pressure chamber is utilized to prevent extrudent from escaping from the extrusion zone through the entry port provided for the introduction of the reinforcing member. This invention is useful in that it provides a method for incorporating reinforcing members into extruded articles.

3,706,217
ACCELEROMETER
John M. Slater, Fullerton, and Doyle E. Wilcox, Hacienda Heights, both of Calif., assignors to North American Rockwell Corporation
Filed June 10, 1970, Ser. No. 44,967
Int. Cl. G01p *15/08*
U.S. Cl. 73—497 **4 Claims**



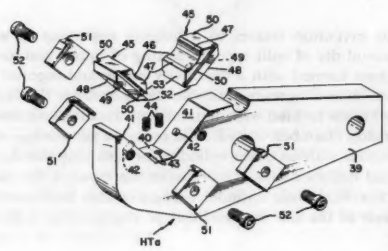
The invention is directed to a three-axes translational, digital accelerometer, comprising a proof mass contained within a cavity which closely surrounds the proof mass with a dampening liquid filling the space between the proof mass and the inner walls of the cavity. The proof mass is constructed and arranged to have a cubical coefficient of expansion substantially the same as that of the dampening liquid so as to minimize any temperature-dependent scale factor changes. Means are provided for detecting departure of the proof mass from a mull position within the cavity under the influence of an acceleration force. Additional means are provided which are responsive to the detected departure of the proof mass from a null position which means are used to force the proof mass towards the null position such that the amount of force required is directly proportional to the acceleration sensed by the proof mass.

3,706,218
PATTERNED DIFFUSE REFLECTING
William B. Elmer, 113 Pinckney Street, Thornton, N.H.
Division of Ser. No. 729,781, May 16, 1968, abandoned. This application May 25, 1970, Ser. No. 48,686
Int. Cl. B21j *13/02*
U.S. Cl. 72—379 **5 Claims**



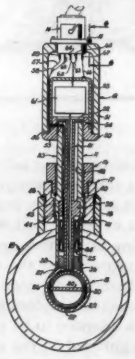
A reflecting surface provides a controlled degree of diffusion by forming a number of generally congruent depressions of predetermined depth and shape. The surface prior to forming the depressions is typically essentially a specular reflecting surface. The depressions may be formed by placing the specular reflecting sheet between two opposed dies having intermeshing projections, each projection typically covering about one-third the area between adjacent projections and of generally pyramidal shape with rounded tops.

3,706,219
CRIMPING TOOL AND DIE ASSEMBLY
Joseph Willard Hoffman, Liverpool, and Henry William Demler, Sr., Lebanon, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Division of Ser. No. 667,461, Sept. 13, 1967, Pat. No. 3,575,036. This application May 21, 1970, Ser. No. 39,410
Int. Cl. B21d *41/00*
U.S. Cl. 72—402 **4 Claims**



A die assembly comprises opposed carrier members in which pairs of die members are pivotally mounted so that the pairs of die members are disposed opposite each other. Spring means maintain the pairs of die members in positions so that the crimping areas thereof are directed away from each other in a nonoperating position and the crimping areas are moved toward each other upon interengagement of the pairs of die members to define a crimping configuration to be applied to a ferrule when positioned within the crimping areas.

3,706,220
DENSITOMETER
Charles Eveleigh Miller, Boulder, Colo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed March 11, 1971, Ser. No. 123,254
Int. Cl. G01n *9/00*
U.S. Cl. 73—32 **2 Claims**



A temperature insensitive vibration densitometer utilizing a thin vibrating vane of Ni Span C, a first cylinder of 416 stain-

less steel to carry the vane, and a second cylinder outside the first. An interference fit exists between cylinders. The second cylinder is also made of Ni Span C. When the second cylinder thickness is about equal to or somewhat less than that of the first cylinder, the instrument is practically temperature insensitive. The 416 stainless steel has a thermal coefficient of expansion greater than that of the Ni Span C. Even though the relationship of the densitometer resonant frequency to temperature is extremely difficult to analyze, the necessary correction can be made as aforesaid. The invention thus overcame a difficult problem.

3,706,221

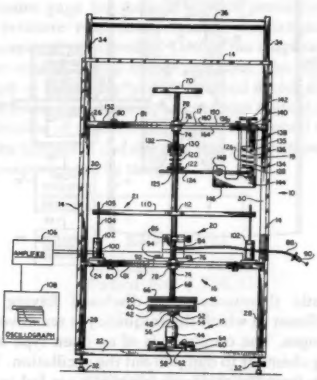
PARALLEL-PLATE VISCOMETER WITH DOUBLE-DIAPHRAGM SUSPENSION

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Thomas H. Sauer, 1132 Atlee Drive, La Canada, Calif.; Robert F. Landel, 1027 Sunmore Lane; Robert F. Fedors, 2127 Pinecrest Drive, both of Altadena, Calif., and Harry T. Fearnehough, 158 West Palm Drive, Arcadia, Calif.

Filed May 12, 1971, Ser. No. 142,719

Int. Cl. G01n *11/10*

U.S. Cl. 73—57 **10 Claims**



A parallel-plate viscometer employing an upper optical flat attached to the lower end of a vertical rod axially suspended by a pair of thin, concentrically perforated metal diaphragms and a counter-balance spring system. The upper optical flat is centered and is parallel to a fixed lower optical flat. The upper flat is weighted and lowered until it is just touching a sample placed on the lower flat. The upper flat is then released. The position of the weighted flat as it reduces the height of the sample is recorded, and these recorded values are employed in a mathematical formula to determine absolute viscosity.

3,706,222

AQUATIC TORSION-FATIGUE TEST APPARATUS

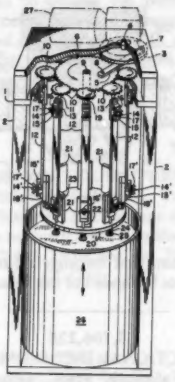
Sydney Smith, Akron; Jerry Donald Hunt, Cuyahoga Falls, and Richard Brotherton Esler, Clinton, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed March 24, 1971, Ser. No. 127,692

Int. Cl. G01n *3/32*

U.S. Cl. 73—91 **1 Claim**

The apparatus described herein involves equipment for testing rubber-coated fabrics under stress, twisting and flexing in fluid media corresponding to those to which the material might be subjected while undergoing similar physical abuse in



actual use. The test equipment is designed specifically to correlate with field conditions.

3,706,223

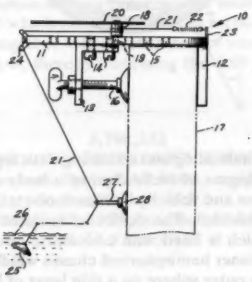
SPEED INDICATOR FOR BOATS

Harry R. Dickens, 6915 N. Crestline, Spokane, Wash.

Filed April 5, 1971, Ser. No. 131,227

Int. Cl. G01c *21/10*

U.S. Cl. 73—184 **2 Claims**



A device for indicating speed of a boat in the water. This device includes a clamp for attachment to the hull of a boat and on the clamp is carried a rotatable disc needle or pointer which will indicate the speed of the boat by aligning with the calibrations on the disc portion of the device. The device utilizes the principle of drag upon an object within the water.

3,706,224

MARINE SPEEDOMETER

Ronald R. Overs, 119 Wickham Drive, Williamsville, N.Y.

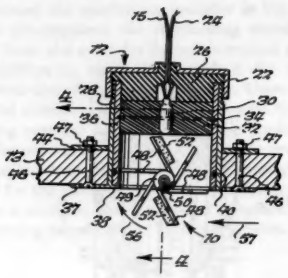
Filed Feb. 3, 1971, Ser. No. 112,268

Int. Cl. G01c *21/10*

U.S. Cl. 73—187 **1 Claim**

A low drag impeller wheel mounted in an enclosure which

when installed in the hull of a ship will rotate through the force of water acting upon it, and operate magnetically a pulse



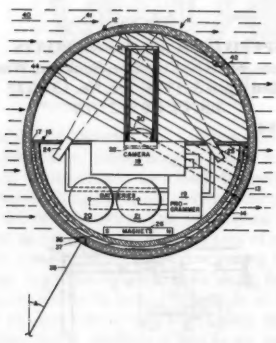
generating mechanism that through a current responsive instrument will indicate the speed of the vessal.

3,706,225

DIRECTIONAL INCLINOMETER

Paul B. Stimson, Falmouth, Mass., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 22, 1970, Ser. No. 82,884
Int. Cl. G01p *5/00*
U.S. Cl. 73—189 **4 Claims**



A device for indicating and recording data representative of direction and degree of inclination of a body or a line or of current direction and velocity by means of a tethered buoyant pendulum is provided. The device includes an outer sphere, one half of which is lined with concentric circles of various colors, and an inner hemispherical chassis which is adapted to float within the outer sphere on a thin layer of liquid between the spheres. The chassis carries photographic equipment and magnets, the former photographing arcs of the concentric circles to indicate current velocity and the latter aligning the chassis so that inclination and direction are indicated by the colors and positions of the arcs photographed.

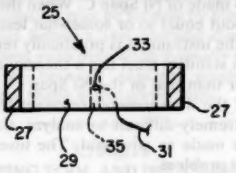
3,706,226

CALORIMETER FOR OBEJCTS OF LOW SOLAR ABSORPTIVITY

Otis G. Kramer, Hawthorne, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed May 5, 1971, Ser. No. 140,400
Int. Cl. G01k *17/00*
U.S. Cl. 73—190 H **1 Claim**

A rectangular calorimeter with a copper body except for an upper surface of constantan foil. To the calorimeter's base is attached a thermocouple and a differential thermocouple wire, and to the upper surface is attached a copper center tap



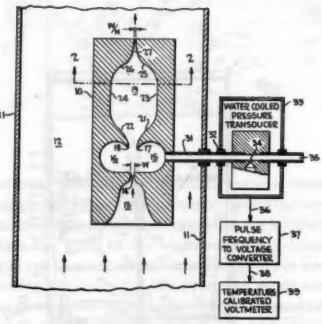
wire. A series of these calorimeters is achieved by attaching each center tap wire to the base of an adjacent calorimeter.

3,706,227

PNEUMATIC THERMOMETER

Richard N. Gottron, Kensington, Md., and Wilmer Gaylord, Washington, D.C., assignors to the United States of America as represented by the Secretary of the Army

Filed March 27, 1963, Ser. No. 268,497
Int. Cl. G01k *11/26*
U.S. Cl. 73—339 A **3 Claims**



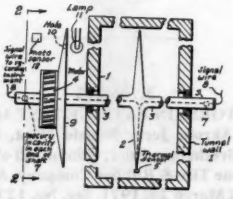
A pneumatic thermometer is disclosed having a fluid operated oscillator in which the frequency is sensitive to temperature changes. The oscillator is of an open type and contains a stilling chamber to dampen out the oscillation. The pulses obtainable from the oscillator chambers are fed to a transducer and the output of the transducer is fed to a pulse converter to which a temperature calibrated indicator is connected.

3,706,228

TEMPERATURE AND VELOCITY APPARATUS FOR MOVING FLUIDS

Clarence C. Bush, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 5, 1971, Ser. No. 103,974
Int. Cl. G01k *1/14, 7/00, 13/02*
U.S. Cl. 73—343 R **8 Claims**



In order to measure the temperature and velocity of a high speed stream of a gas such as air a temperature sensor is

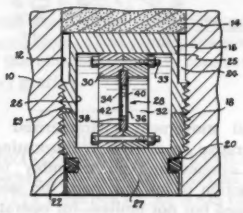
placed on the peripheral area of a disc wheel and the disc is positioned in the path of air flow and is spun until its periphery is traveling at the velocity of the air. The sensor, when moving downstream, has zero velocity with respect to the fast-flowing air and therefore gives a true reading of the air temperature.

3,706,229

PRESSURE GAGE FOR RECORDING PEAK PRESSURES

Valmore F. De Vost, and John W. Simkins, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Feb. 1, 1971, Ser. No. 111,392
Int. Cl. G01l 7/08
U.S. Cl. 73—396 7 Claims



A pressure gage for recording peak pressures including a pair of pressure responsive flexible diaphragms fixed in a spaced, opposed relationship. One of the diaphragms includes a surface coated with a non-drying dye. The diaphragms are positioned a selectable predetermined fixed distance from each other and are adapted to come into mutual contact upon the application of external pressure. The contact causes an imprint to be formed in the dye of a size proportional to the peak pressure experienced by the gage.

ERRATUM

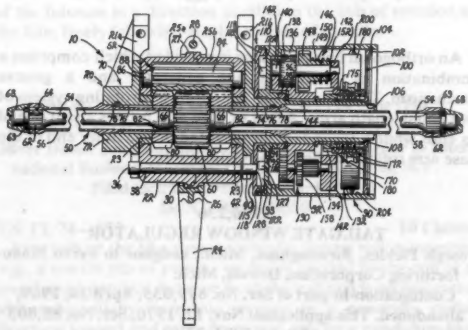
For Class 73—497 see:
Patent No. 3,706,217

3,706,230

ROTARY ACTUATOR

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of; Allan R. McDougal, Crescenta, Calif., and Richard L. Moore, Glendora, Calif.

Filed Jan. 5, 1971, Ser. No. 104,048
Int. Cl. F16h 5/40
U.S. Cl. 74—2 21 Claims



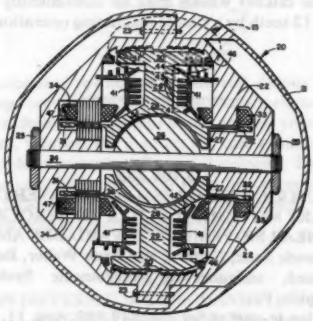
A rotary actuator particularly suited for use aboard operative spacecraft for deploying pivotally supported structures such as, for example, solar panels and the like. The actuator is characterized by a torsion bar coupled with a pivotally supported crank arm through a gear cluster in a manner such that the torsion bar continuously applies a constant deployment force to said solar panel, when the solar panel is in a retracted configuration; serves to deploy the panel at a controlled, sinusoidal rate of acceleration; and subsequently supports the panel in its deployed configuration with minimal supporting forces being applied to the panel through a maximum moment arm whereby structural rigidity for the deployed panel is achieved.

3,706,231

TURBULENCE AND VORTEX SUPPRESSION IN GYROS

Raymond Noar, Bellflower; Robert H. Tuffias, Costa Mesa; Kenneth P. Gow, Whittier, and Thomas A. Drew, Orange, all of Calif., assignors to North American Rockwell Corporation

Filed Oct. 2, 1970, Ser. No. 77,472
Int. Cl. G01c 19/04
U.S. Cl. 74—5 R 4 Claims



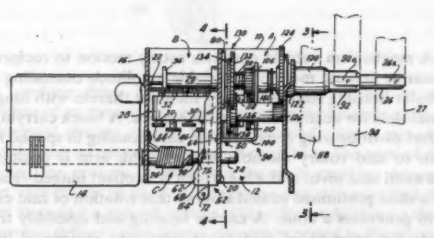
A gyro in which the rotor operates in a fluid medium generally has a non-laminar flow causing gyro drift and hence inaccuracy. Certain inventive features are built into the structure of the tyro which minimize vortex or turbulent flow in the fluid medium together with minimization of waviness of vortex or turbulent flow, thereby increasing the drift stability of the gyro.

3,706,232

PRESET TUNER WITH IMPROVED TUNING LINKAGE

Alexander Robertson, Springfield, Mass., assignor to General Instrument Corporation, Newark, N.J.

Filed July 2, 1971, Ser. No. 159,349
Int. Cl. F16h 35/18
U.S. Cl. 74—10.6 32 Claims



A preset tuning mechanism of the type having a channel selector drum including a plurality of adjustable tuning projections is provided with a mechanism adapted to operatively disengage the rotor shaft from the selected tuning projection during channel selection. This mechanism includes a ram which is

spring biased into contact with the selected tuning projection and operatively connected to the rotor shaft for converting its axial sliding movement into rotary fine tuning adjustment.

The ram is operatively connected to a slide bracket which is provided with a cam follower biased into engagement with a lobe type cam mounted on the channel selector shaft. As the channel selector shaft is rotated the slide bracket is moved downwardly into engagement with the ram thereby in turn to move the ram out of engagement with the selected tuning projection. The drive mechanism for the channel selector drum is also mounted on the channel selector shaft in a manner synchronizing drum rotation with ram actuation. Thus the rotation of the drum occurs only during a dwell stage at which the ram is moved completely clear of the tuning projections, thereby eliminating all relative lateral movement between the tuning projections and the ram.

The second embodiment provides an improved indexing mechanism for the drum comprising a pair of molded toothed ratchet wheels spring biased into meshing engagement. One of the ratchet wheels is mounted on the drum for rotation therewith and the other is spring biased into meshing engagement with the drum wheel by spring means mounted on the chassis. The ratchet wheels may be conveniently converted from six to 12 teeth by a simple machining operation.

3,706,233

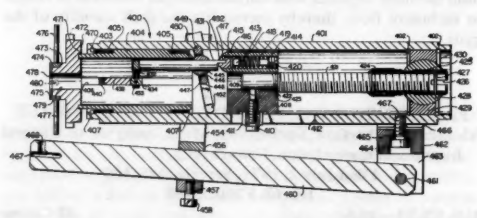
ECCENTRIC MECHANISM FOR CONVERTING A ROTARY MOVEMENT INTO A RECIPROCATING RECTILINEAR MOVEMENT OF VARIABLE AMPLITUDE

Manuel Claude Sanz, Geneva, and Rene Weber, Bern, both of Switzerland, assignors to Micromedic Systems, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 849,025, Aug. 11, 1969, Pat. No. 3,614,896. This application Aug. 19, 1970, Ser. No. 27,217

Int. Cl. F16h *21/16*

U.S. Cl. 74—25 **20 Claims**



A mechanism vehicle converts rotary motion to reciprocal linear or arcuate motion of variable amplitude consisting of a tubular housing having a rotary member therein with longitudinal slots for accomodating a slide piece. A block carrying an offset pivot bearing is mounted in said housing in spaced relation to said rotary member and a crank arm is positioned between said pivot and a lug which is in offset hinged relation to a slide positioned in said slots so that rotation of said crank arm generates a cone. A carrier bearing and assembly translates the rotation of said crank arm into reciprocal linear movement of a pair of slide blocks positioned in slots in said housing. A threaded adjustment member determines the spacing between said rotary member and said block carrying the pivot bearing so as to vary the stroke of the slide blocks in relation to the position of the carrier bearing on the cone generated by rotation of said crank arm.

3,706,234

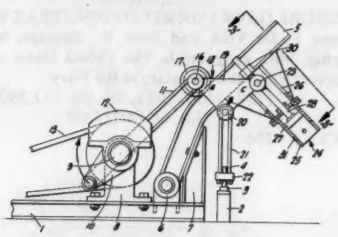
OIL WELL PUMP ACTUATING MECHANISM

Reuben R. Erich, Fayetteville, Ark., assignor to Richard R. Erich, Fayetteville,, Ark., a part interest

Filed Dec. 29, 1970, Ser. No. 102,303

Int. Cl. G05g *1/00*

U.S. Cl. 74—41 **5 Claims**



A mechanical movement characterized by structural mechanism operative to convert reciprocating motion of a crank-actuated connecting rod assembly to straight-line reciprocating motion of another part; the mechanism being especially designed but not limited--for operating the sucker rod of a deep well oil pump.

3,706,235

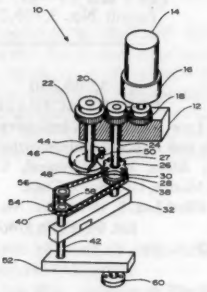
ORTHOGONAL LINE GENERATOR

William E. Duncan, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed March 10, 1971, Ser. No. 122,952

Int. Cl. F16h *27/00*

U.S. Cl. 74—52 **3 Claims**



An orthogonal line generator is provided which comprises a combination of a straight line generator and a geneva mechanism. The straight line generator is a rotating system of two equal length arms. A first or base arm rotates about one of its ends while a secondary arm pivoted on the other end of the base arm rotates in the opposite direction.

3,706,236

TAILGATE WINDOW REGULATOR

Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

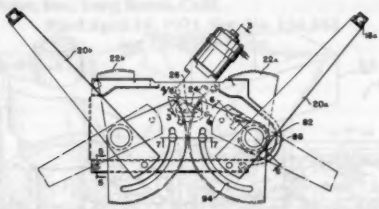
Continuation-in-part of Ser. No. 819,035, April 24, 1969, abandoned. This application Nov. 12, 1970, Ser. No. 88,803

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.11 **8 Claims**

A double arm tailgate window regulator comprising a toothed sector for each arm, the sectors being mounted with

the toothed portions in minimum clearance condition. A separate drive pinion is in mesh with each sector and said pinions are in mesh with each other. Due to the minimum



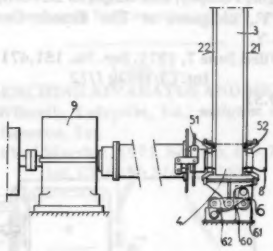
clearance between the toothed sectors, the pinions are substantially displaced from a line joining the pivot axes of the sectors. One of the pinions is directly connected to a motor through planetary gearing.

3,706,237

DEVICE FOR DRIVING A ROTARY ELEMENT CAPABLE OF DEFORMATION AND OF DISPLACEMENT PARALLEL TO ITS THEORETICAL AXIS OF ROTATION

Gerard Pere, Le Breuil, France, assignor to Creusot-Loire, Paris, France

Filed Sept. 28, 1971, Ser. No. 184,557
Claims priority, application France, Jan. 8, 1971, 7100525
Int. Cl. F16h *57/00*
U.S. Cl. 74—410 **7 Claims**



A device for driving a rotary element, more particularly a rotary kiln, capable of deformation and displacement along its axis and comprising a toothed rim driven by a pinion mounted in a housing articulated on a fulcrum and bearing on two cylindrical tracks coaxial with the rim by way of at least one pair of rollers, characterized in that the housing is connected to a fixed block by a member capable of producing displacement of the fulcrum in a direction parallel to the axis of rotation of the kiln, freely following displacements of the kiln.

3,706,238

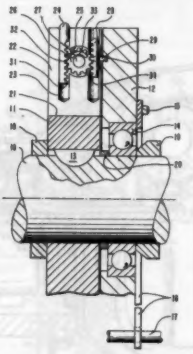
APPARATUS AND METHOD FOR CONVERTING ROTARY TO HARMONIC RECIPROCATING MOTION

Oliver Duane Johnson, East Brunswick, N.J., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1971, Ser. No. 194,081
Int. Cl. B65h *79/00*
U.S. Cl. 74—573 **10 Claims**

As a web or the like passes around a driven roll, a member (e.g., a tractor pin or punch) rotatably carried by the roll at a preselected nominal distance from the roll axis is reciprocated with substantially harmonic motion in a generally radial direction toward and away from said axis by a pendulum-like mechanism having an oscillation frequency that increases as the angular velocity of the roll and hence centrifugal force on the member increases.

The mechanism comprises an oscillatory element having an eccentric mass center or center of oscillation that at the midpoint of the member's reciprocation stroke is farthest from the roll axis. A cam follower preferably couples the element to a stationary cam that encircles the roll and has a follower-receiving groove of a configuration that ensures synchronization of the element so that it will oscillate at a fundamental natural frequency through one or more complete cycles dur-



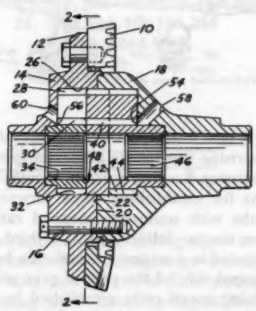
ing each successive revolution of the roll despite frictional drag. Driving force exerted by the oscillatory element on the member thus desirably increases as the angular velocity of the roll increases, whereas the load on the cam remains substantially negligible irrespective of angular velocity. This enables operation at very high rotational (and hence reciprocating) speeds that produce centrifugal forces significantly exceeding those possible with prior art arrangements.

3,706,239

PINION DIFFERENTIAL MECHANISM HAVING INTERNAL BIAS TORQUE

Albert F. Myers, Warren, Mich., assignor to Boise Cascade Corporation, Boise, Idaho

Filed Feb. 9, 1971, Ser. No. 113,899
Int. Cl. F16h *1/38*
U.S. Cl. 74—715 **5 Claims**



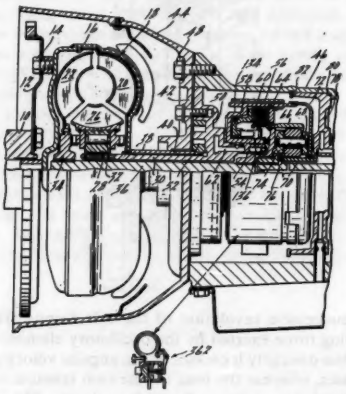
A positive drive differential mechanism for use in the driveline of an automotive vehicle comprising discrete pairs of differential pinions carried by a differential carrier and side gears having a common axis that is parallel to the axes of the pinions, the pinions of each pair being in meshing engagement, one pinion of each pair engaging one side gear and the other engaging a second side gear thereby establishing a double torque delivery path from a ring gear carried by the carrier and each of two axle shafts, each shaft being connected to a separate one of the side gears to the pinions being journaled rotatably in cooperating pinion recesses formed in the carrier, thus providing an outside diameter running fit between the pinions and the carrier and establishing an inherent friction bias torque.

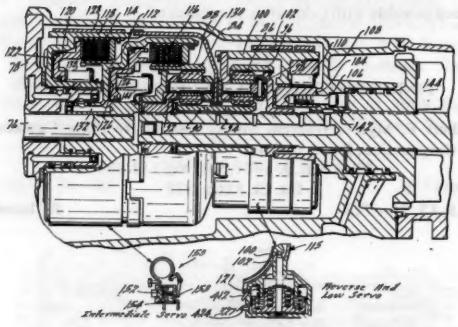
3,706,240

FOUR-SPEED RATIO AUTOMATIC POWER TRANSMISSION MECHANISM

Karl J. Borneman, Detroit; Richard E. Byler; Paul G. Roberts, both of Livonia, and Stepas Smalinskas, Darmouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 17, 1971, Ser. No. 154,118
Int. Cl. B60k *21/00*; F16h *57/10*
U.S. Cl. 74—869 **4 Claims**





A planetary gear transmission mechanism for an automotive vehicle comprising two simple planetary gear units located in a first transmission housing portion, together with clutch and brake means for establishing three forward driving torque delivery paths with uniformly stepped ratios and a single reverse drive torque delivery path, a third simple planetary gear unit situated in a second transmission housing portion on the torque input side of the pair of gear units whereby each forward driving speed ratio established by the pair of gear units, as well as the reverse drive ratio, may be modified, and clutch and brake means in the second housing portion for controlling the motion of the elements of the third gear unit.

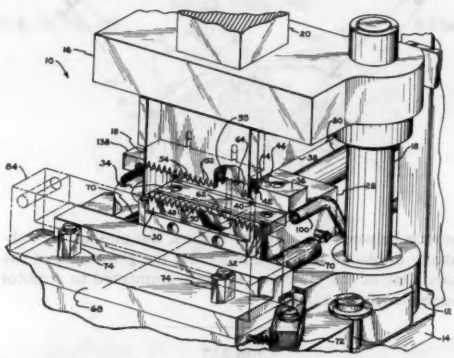
3,706,241

INSULATION STRIPPER FOR RIBBON CABLE

John D. Balmer, New Cumberland, Pa., and Jerry A. Kendall, Garland, Tex., assignors to Berg Electronics, Inc., New Cumberland, Pa.

Filed Oct. 21, 1970, Ser. No. 82,575
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.51 **8 Claims**

Disclosed is an apparatus for stripping the insulation from wires in a ribbon cable. The wires at the end of the cable are positioned between a pair of jaws. The jaws include orienting means for accurately locating the individual wire conductors so that upon closing of the jaws pairs of cutters sever the insulation on the wires without severing the metal conductors. An additional cutter trims the conductor ends. Following closing of the jaws, the cable is pulled from between the cutters to strip the insulation from the trimmed ends of the conductors. Subsequently terminals may be attached to the stripped and trimmed ribbon cable conductors.

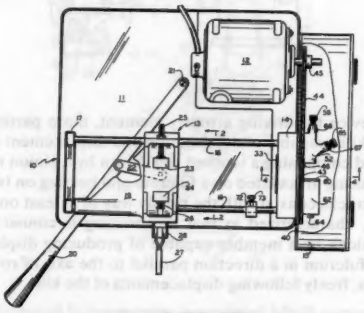


3,706,242

ROTARY BLADE CABLE STRIPPER

James R. Wright, Pompey, and Ralph E. BeVard, Fayetteville, both of N.Y., assignors to The Eraser Company, Inc., Syracuse, N.Y.

Filed June 7, 1971, Ser. No. 151,471
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.51 **3 Claims**



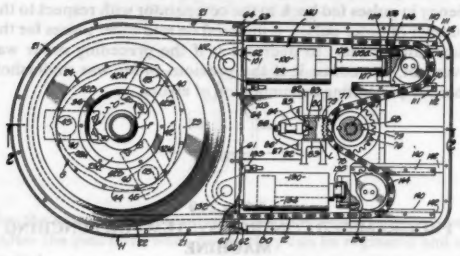
A machine for stripping the insulation from the ends of heavy wires and cables has a continuously rotating blade which is radially adjustable toward and away from an axially extending hole in the revolving blade carrying member. Means are provided for gripping a cable and advancing it axially through the hole and bushing means are provided in the hole for centering the cable therein. The blade is oscillatably secured on its carrying member so that it can swing away from the hole. Stop means are provided on the carrying member for limiting the swinging of the blade away from the hole so that the blade engages the cable insulation as the cable is fed through the hole and the blade then cuts the insulation when retracting the cable swings the blade inward against the blade carrying member.

3,706,243

REVERSE STOP FOR POWER TONGS

Carl Alfred Wilms, La Habra, Calif., assignor to Byron Jackson, Inc., Long Beach, Calif.

Filed April 16, 1971, Ser. No. 134,661
Int. Cl. B25b *17/00*
U.S. Cl. 81—57.18 15 Claims



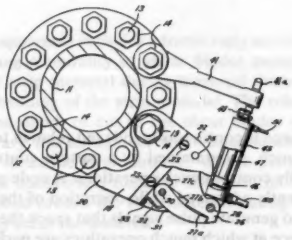
A power tong for making up and breaking out pipe joints, in which pipe gripping jaws are actuated to pipe gripping positions from retracted positions responsive to relative rotation in either direction between a jaw carrying member and an actuator member, and the jaws are retracted upon reverse relative rotation in the opposite direction, and reverse stop means are provided to prevent reverse relative rotation of said members past the positions at which the jaws are retracted. The reverse stop means includes alternately positionable stops carried by one of the members engageable with alternately spaced stops on the other member to limit reverse relative rotation.

3,706,244

WRENCHING APPARATUS AND METHOD

Claude H. Wilmeth, Lafayette, La., assignor to N-S-W Corporation, Houston, Tex.

Filed March 1, 1971, Ser. No. 119,754
Int. Cl. B25b *21/00*, *13/00*
U.S. Cl. 81—57.32 13 Claims



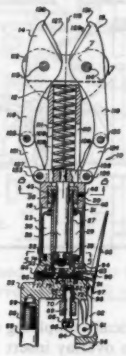
A wrenching apparatus useful in tightening and loosening threaded connectors such as nuts or bolts which are closely adjacent, including one portion which is arranged for mounting over a nut which is to be rotated and another portion which is arranged for mounting over an adjacent nut and which is arranged to prevent rotation thereof. Means in the form of an hydraulic cylinder is interposed between the two portions which, upon actuation causes rotation of one portion relative to the other and thereby causes rotation of the nut which is being loosened or tightened. The method includes steps of placing a wrench over one of the nuts and an anchor and reaction plate over an adjacent nut and exerting a power force between the two portions, whereby the wrench is rotated thereby turning the first nut.

3,706,245

MANUAL HYDRAULICALLY-OPERATED TOOLS

Gerard Van Schaik, Delta, British Columbia, Canada, assignor to Dynamic Tools Ltd., Vancouver, British Columbia, Canada

Filed Dec. 28, 1970, Ser. No. 101,830
Int. Cl. B25b *7/22*
U.S. Cl. 81—301 13 Claims



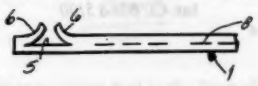
Hydraulically-operated tools for different purposes, and particularly for cutting bars, multi-strand cables, and the like, and including a pair of operating jaws which are operated through a linkage by a hydraulic system and cylinder unit. Handles for the tool are used to operate the piston and cylinder unit as a pump. The tool when made for cutting includes gripping means for firmly holding the article to be cut in correct relationship to the operating jaws. Said jaws are provided with cutting edges, and means is provided for keeping the cutting edges in correct alignment and for preventing the edges from coming together during a cutting action.

3,706,246

PROCESS FOR SLITTING SHEET METAL

Norval A. Keith, East Alton, Ill., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 5,548, Jan. 26, 1970. This application July 26, 1971, Ser. No. 166,268
Int. Cl. B26d *3/08*
U.S. Cl. 83—7 5 Claims

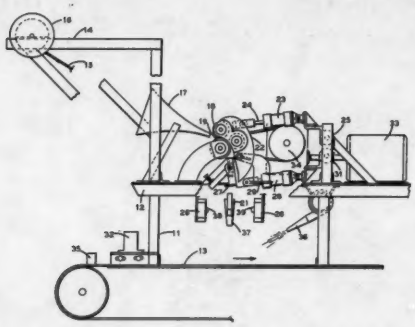


A process and apparatus for slitting sheet metal having a plurality of inflatable fluid passageways therein into strips, each having at least one inflatable fluid passageway which comprises providing sheet metal having at least two sheets pressure welded together in some areas and having a plurality of unwelded areas corresponding to inflatable passageways. The sheet metal contains at least one unwelded area extending within it in a predetermined fixed relationship to the remaining unwelded area, this one unwelded area being a control tube for use in aligning the sheet metal for slitting. The aligning of the sheet metal is achieved by passing it about a locater mandrel which plows open the control tube and fixes the position of the sheet as it enters the slitting assembly. The sheet metal as thus aligned then proceeds into a conventional slitting assembly wherein it is cut into strips. The locater mandrel may be fixed or may be provided with means for adjusting its position relative to the slitting assembly. A second slitting assembly may be employed ahead of the locater mandrel whose purpose is to remove a portion of the strip containing part of the control tube.

3,706,247
INSERT DISPENSER

Frank Emmons Clark, Augusta, Ga., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Dec. 4, 1970, Ser. No. 95,184
Int. Cl. B26d *5/34;* **B65h** *35/06*
U.S. Cl. 83—24 **3 Claims**



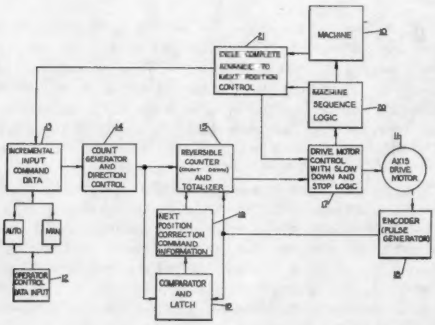
A method of automatically supplying a cushioning sheet to a shaped refractory as an overlay insert prior to packaging so that the sheet functions as a cushion between such items to retard the abrasion of the surfaces thereof during handling and shipment. The web of cushioning material is cut in a predetermined length in response to the presence of an item at a predetermined location relative to a cutting station. Also, the web of cushioning material is fed to the cutting station in response to the free-fall travel of a severed sheet in an intersecting course with that of a shaped refractory moving along a conveyor at a predetermined velocity.

An apparatus for the aforesaid function wherein the feed and cutting are sequentially responsive to a plurality of sensing means, one of which is mounted intermediate a drag means and the shaped refractory to actuate feed and the other of which is mounted at a specified location relative to the cutting station adjacent the conveyor in order to actuate cutting.

3,706,248
NUMERICAL CONTROL APPARATUS FOR A SHEAR

John J. Erhart, Cincinnati, Ohio, assignor to Cincinnati Incorporated, Cincinnati, Ohio

Filed Jan. 4, 1971, Ser. No. 103,640
Int. Cl. B26d *5/00*
U.S. Cl. 83—74 **3 Claims**

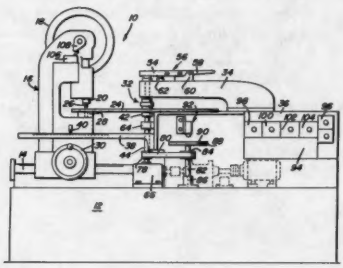


A numerical control for a shear, making it possible to perform accurately, and without cumulative error, a sequence of cuts on a work piece. Sequence data is entered into an electronic circuit which generates a series of order pulses representative of the data input, and transmits these pulses to a totalizer and to a comparator and to the drive for the gauge bar. Feed back data from the gauge bar, in terms of a series of pulses representative of actual movement of the gauge bar is sent back to the totalizer and to the comparator. Theoretically, when the number of feed back pulses equals the number of order pulses, the gauge bar drive stops. The excess or deficiency in pulses fed back to the comparator with respect to the number of order pulses, is imposed on said order pulses for the succeeding order, to decrease it if the preceding order was overshot, or reduce it if the previous order was undershot, thereby preventing accumulation of errors.

3,706,249
PROGRAMMED CONTROL SYSTEM FOR PUNCHING MACHINE

Samuel R. Bruckner, Washington, Pa., assignor to Xetca, Inc.

Filed March 30, 1970, Ser. No. 23,831
Int. Cl. B26d *5/34*
U.S. Cl. 83—69 **8 Claims**



A workpiece is continuously indexed relative to a cyclically operable punch, programmed by a pattern control system to automatically control punch operations. A code pattern wheel is intermittently advanced while operation of the punch is interrupted, to generate pulse signals that space the locations on the workpiece at which punch operations are performed.

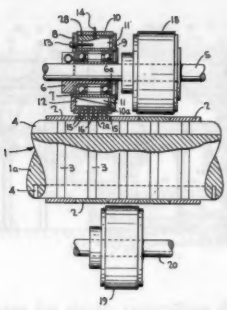
3,706,250
PERFORATING MECHANISM

Joseph Herd, Munster near Dieburg, Germany, assignor to Maschinenfabrik Goebel GmbH, Darmstadt, Germany

Filed June 18, 1971, Ser. No. 154,444
Claims priority, application Germany, June 18, 1970, P 20 29 863.9
Int. Cl. B26f *1/00*
U.S. Cl. 83—345 **10 Claims**

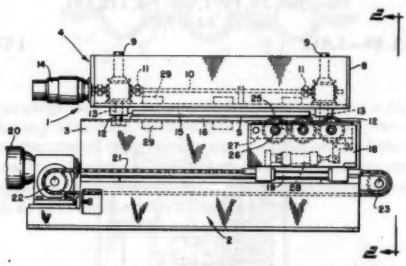
A perforating mechanism for simultaneously perforating a web of material both longitudinally and transversely includes a

revolving matrix roller and a plurality of discs carrying perforation pins which cooperate with holes in the matrix roller



for the purpose of perforating a web of material therebetween. After the pins have worn down, they can be reground and adjusted.

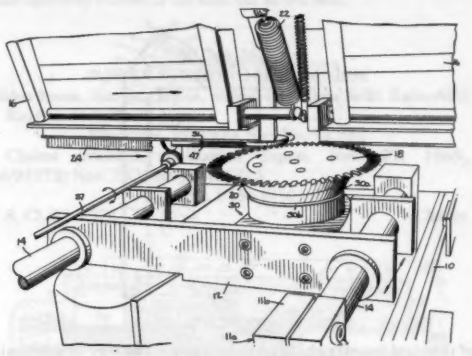
3,706,251
SHEARING APPARATUS
Donald J. Wheeler, Kent, and Victor Lohrenz, Bedford, both of Ohio, assignors to said Wheeler, by said Lohrenz
Filed April 17, 1970, Ser. No. 29,430
Int. Cl. B26d *7/02, 1/20*
U.S. Cl. 83—456 **13 Claims**



Shearing apparatus includes a tranversely movable shear assembly having a plurality of shear blades mounted thereon which shear strip material during traversal thereof with very little or no bending of the strip material. The relative vertical positions and depth of cut of the shear blades may be controlled to vary the amount of force and number of passes required to shear the strip material. Where plural passes are required, the transversely movable shear assembly is progressively advanced toward the strip material during each pass to progressively shear the material.

3,706,252
BOOK CUT-OFF SAW
Thomas B. Hawkes, and Richard B. Hawkes, both of Easton, Pa., assignors to Harris-Intertype Corp., Cleveland, Ohio
Filed July 17, 1970, Ser. No. 55,703
Int. Cl. B26d *1/14*
U.S. Cl. 83—470 **7 Claims**

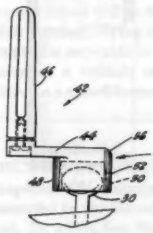
A cut-off saw for cutting through the signatures of a book transversely to the plane of the signatures when the book is clamped firmly together. The cutting element of the saw is a thick rotatable disc having a number of blades mounted on the periphery thereof and extending outwardly therefrom in the plane of the disc. Each of the blades has a relief in its leading edge, a side rake extending toward its trailing edge, and a bevelled end portion extending radially inwardly toward its trailing edge. There is provided a slidably supported plate



which can be positioned adjacent to the path of travel of the blades in order to serve as an anvil against which the blades can shear the paper.

3,706,253
Patent Not Issued For This Number

3,706,254
GUITAR SERVICING TOOL
Van Morin, Hollywood, Calif., assignor to Astro Music Company, Inc., North Hollywood, Calif.
Filed April 25, 1972, Ser. No. 247,484
Int. Cl. G10g *7/00*
U.S. Cl. 84—458 **3 Claims**

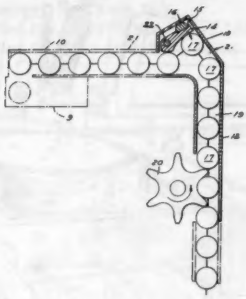


A plastic guitar servicing tool in the form of a crank with a rotatable handle, the remote end of the arm of which is configured to provide a receptacle for the key by which each guitar string may be tightened or loosened, the wall of one end of the receptacle being notched to enable such end also to be used to pry out the pegs adjacent the bridge of the guitar, by slipping such notched end under the head of each peg and employing the tool as a lever to effect such prying.

3,706,255
AMMUNITION BOOSTER
Roland A. Magnuson, Seattle, Wash., assignor to The United States of America as represented by the Secretary of the Army
Filed Aug. 20, 1970, Ser. No. 65,558
Int. Cl. C06b *21/02*; F42b *33/10*
U.S. Cl. 86—1 **7 Claims**

A feed mechanism which comprises a rigid booster chute having an angular bend, a stop plate, having an upper side, inserted in the angular bend so as to form a 90° corner around

which ammunition rounds cannot be pushed by a booster mechanism alone; and a bumper attached to the side whereby the bumper and stop plate are inserted into the angular bend



of the rigid booster chute to absorb impact energy of ammunition rounds which strike the stop plate during passage through the angular bend without damaging a weapon by feeding directly into it.

3,706,256

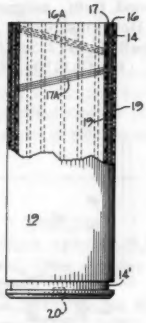
METHOD OF MAKING AMMUNITION

Andrew J. Grandy, 2707 Grant Avenue, North Hills, Pa.

Division of Ser. No. 740,141, June 26, 1968, Pat. No. 3,566,792. This application Oct. 15, 1970, Ser. No. 80,850

Int. Cl. C06b *21/02;* **F42b** *33/10*

U.S. Cl. 86—1 **3 Claims**



The method of making ammunition in which a steel metal skeleton is blanked or stamped to provide a central hub and radially extending fingers. The fingers are then formed to extend in a direction normal to the hub and in a peripherally spaced relationship with each other. The blanked and formed skeleton is laminated with a reinforced plastic material and the ends of the laminated fingers are necked. A primer is seated in the hub, a projectile is secured and sealed to the laminated fingers, and the laminated skeleton is loaded with propellants.

3,706,257

APPARATUS FOR PACKING A NONFLUENT COMPOSITION

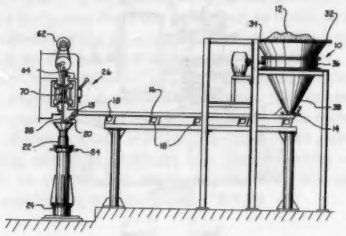
Joel Collman, Roy, Utah, assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed May 11, 1970, Ser. No. 36,295

Int. Cl. C06d *1/08;* **F42b** *3/00*

U.S. Cl. 86—20 R **6 Claims**

A crumbly, tacky, nonfluent mass is first separated into small segments by a shredding plate operating against the mass; these segments are then formed into firm, rounded, fluent pellets by a vibrating conveyor and dispensed into a tubular case, where they are tamped into a solid mass by a reciprocating, self-adjusting tamping rod, the case being supported on a rotating table.



3,706,258

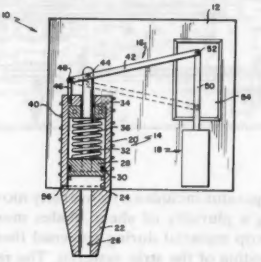
ENVIRONMENTAL SAFE AND ARM DEVICE FOR IGNITER FOR ROCKETS AND MISSILES

Emanuel Edward Katcher, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 25, 1971, Ser. No. 112,491

Int. Cl. F41f *3/04*

U.S. Cl. 89—1.812 **1 Claim**



A safety switch and arming device used on the igniters of aircraft carried rockets and missiles. The device utilizes a pitot tube to sense when the launching ship has reached a minimum safe launch speed. At that point the switch in the igniter circuit is closed and the ordnance can be launched.

3,706,259

MULTIBARREL AUTOMATIC WEAPON

Eugene Ashley, Burlington; Douglas P. Tassie, Williston, and James M. Seemann, Burlington, all of Vt., assignors to General Electric Company

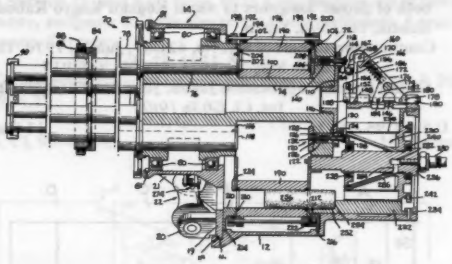
Filed March 10, 1970, Ser. No. 18,099

Int. Cl. F41d *7/02*

U.S. Cl. 89—12 **9 Claims**

A Gatling type gun having a plurality of barrels fixed in a ro-

tor, and an endless chain of separable chambers passing along a path around said rotor into and out of alignment with said

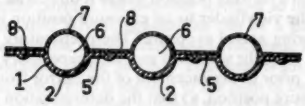


barrels, and means for rigidly controlling the movement of said chambers along said path.

3,706,260
CARTRIDGE BELT

Gad Anders Rausing, Lund, Sweden, assignor to Ladco Enterprises Limited, Hamilton, Bermuda

Filed March 12, 1970, Ser. No. 19,045
Claims priority, application Sweden, March 17, 1969, 3623/69
Int. Cl. F42b *39/08*
U.S. Cl. 89—35 R **3 Claims**

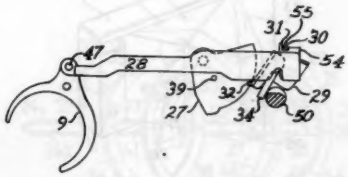


A cartridge belt for automatic firearms includes a plastic strip having transverse, spaced grooves for receiving the cartridges, the central transverse portions of the areas of the belt between the grooves being molecularly oriented to permit hinging of the belt without deformation of adjacent portions of the belt so as to improve flexibility of the belt.

3,706,261
FIREARM

Gary Wilhelm, 55 Kelly Road, Hamden, Conn.

Division of Ser. No. 766,380, Oct. 7, 1968, Pat. No. 3,614,908.
This application April 5, 1971, Ser. No. 90,223
Int. Cl. F41c *19/00*
U.S. Cl. 89—154 **2 Claims**

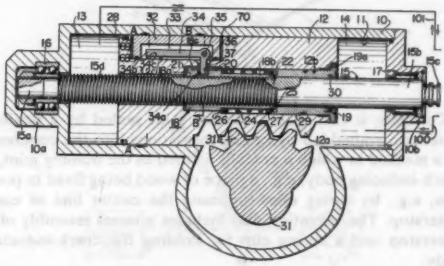


Shown in a toggle action recoil operated semiautomatic pistol is a sear bar mounted on the side of the removable unitary action assembly, connecting the channel shaped sear of the assembly with the trigger mounted in the frame. The front end of the sear bar encircles a stud pin projecting laterally from the trigger and when the action assembly is encased in the pistol frame it is prevented from slipping off the pin by a set screw threaded through the outer wall of the frame. At its rear end the sear bar is U shaped at right angles to its length with a stud projecting therefrom parallel with the sear supporting pin. A double torsion spring acting on the sear and the sear bar stud operably connects the sear bar to the sear.

3,706,262
POWER STEERING MECHANISM

Hideo Inose, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi Pref., Japan

Filed Nov. 25, 1970, Ser. No. 92,752
Claims priority, application Japan, Nov. 27, 1969, 44/95572; Nov. 27, 1969, 44/95573
Int. Cl. F15b *9/10*
U.S. Cl. 91—378 **7 Claims**



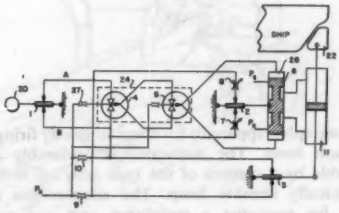
This invention relates to a vehicle wheel power steering mechanism, especially to one having a reciprocal piston member of the type in which a control spool valve means is fitted within the body of the piston member.

The improvement comprises an arrangement in which the valve means is connected hydrauiically with a liquid supply and discharge means arranged outside of the mechanism proper, and with hydraulic operating chambers formed at both ends of a main operating piston contained within a cylinder bore of the mechanism proper for slidably receiving said piston. The valve means is fitted within the body of said piston, and a motion multiplier for magnifying the transmitting movement of a threaded member movable in response to a spindle upon manual actuation of a vehicle steering wheel to said valve means is also fitted in a space formed within said piston.

3,706,263
FLUIDIC STEERING CONTROL

Guy L. Johnson, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 25, 1970, Ser. No. 75,594
Int. Cl. F15b *13/16*
U.S. Cl. 91—388 **2 Claims**



A fluidic control apparatus for controlling the displacement and speed of a ship's rudder (or diving planes) from a remotely located control wherein the amount and the speed of the displacement of the rudder is proportional to the input control.

3,706,264

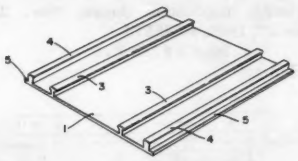
JOINTED CONCRETE STRUCTURES

John Hurst, Westminster, London S.W.1, England, assignor to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 731,374, May 23, 1968, Pat. No. 3,578,733. This application Nov. 14, 1969, Ser. No. 58,752

Int. Cl. E01c *11/02*

U.S. Cl. 94—17 4 Claims



Concrete is cast with a dummy joint sealed by a flexible waterstop embedded by keying formations into the concrete, by a method in which a crack is formed as the dummy joint, a crack-inducing body, e.g., a piece of wood being fixed in position, e.g., by spring clips, opposite the center line of each waterstop. The invention also includes a novel assembly of a waterstop and a spring clip for holding the crack-inducing body.

3,706,265

PHOTOGRAPHIC APPARATUS FOR FIRING A PLURALITY OF FLASH LAMPS

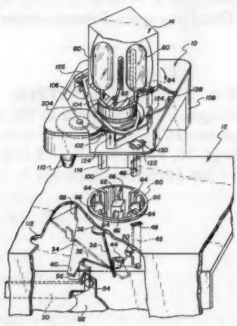
Horst Simon, 7012 Fellbach near Stuttgart, Schorndorf, and Franz Kirpal, 7060 Schorndorf, both of Germany, assignors to Eastman Kodak Company

Filed June 1, 1971, Ser. No. 148,674

Claims priority, application Germany, June 4, 1970, G 70 20 952.8

Int. Cl. G03b *17/48*

U.S. Cl. 95—11 L 7 Claims



Photographic apparatus for simultaneously firing more than one flash lamp. The apparatus is preferably an adapter receivable by a camera of the type adapted to fire a single mechanically fireable lamp. The adapter has a rotatable socket for receiving a multilamp unit and an actuating mechanism which actuates more than one flash lamp at substantially the same time in response to receipt of mechanical force from the camera flash actuating device. For use with cameras having a rotatable socket, the adapter includes a rotatable socket and a coupling mechanism for rotating the adapter socket 180° in response to rotation of the camera socket through 90°.

3,706,266

CAMERA OPERATING WITH PREPARATORY AND SYNCHRONOUS LIGHT

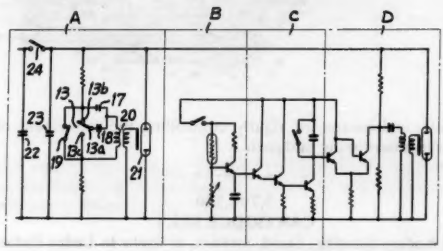
Naoyuki Uno, Saitama-ken, and Seijiro Tokutomi, Fujisawa, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Continuation-in-part of Ser. No. 42,387, June 1, 1970. This application May 26, 1971, Ser. No. 146,917

Claims priority, application Japan, June 8, 1970, 45/49278

Int. Cl. G03b *19/00*

U.S. Cl. 95—11 L 11 Claims



A single lens reflex camera having a light source energized first by preparatory controls to provide preparatory light and then by synchronous controls to provide synchronous light. The synchronous light is used during actual exposure while the preparatory light is used in the determination of the extent of actual exposure. Just prior to actual exposure a reflector is moved from a viewing position where it directs an image of the object to the viewfinder to an exposure position in which it is located during actual exposure. The preparatory controls for energizing the light source to provide preparatory light are actuated just prior to displacement of the mirror from its viewing to its exposure position, so that the determination of actual exposure with the preparatory light takes place immediately prior to the actual exposure.

3,706,267

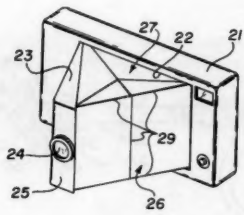
CAMERA BELLOWS

Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 18, 1971, Ser. No. 154,533

Int. Cl. G03b *17/04*

U.S. Cl. 95—39 11 Claims



A bellows structure for use in a photographic camera of the type having a lens supporting door hinged at one end to a main housing. The bellows preferably is molded as a single piece of plastic including integrally formed end frames for attaching the bellows to the housing and door. Stiffening panels are provided at selected locations for controlling fold lines, increasing the thickness of light barriers, and adding structural rigidity.

3,706,268
PHOTOGRAPHIC APPARATUS

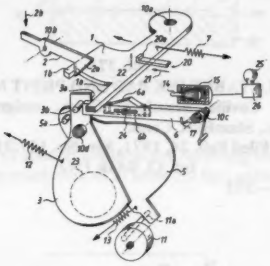
Dieter Engelsmann, 8025 Unterhaching; Hubert Hackenberg, 8 Munich 21, and Karl Deeg, 8025 Unterhaching, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 28, 1971, Ser. No. 166,911

Claims priority, application Germany, July 30, 1970, P 20 37 966.2

Int. Cl. G03b *9/10, 15/05*

U.S. Cl. 95—53 R **10 Claims**



The shutter of a still camera is normally held in a closed and cocked position by a lever which is biased by a torsion spring to bear against a pivotable impeller. The latter can be cocked by the film transporting mechanism and is normally held in the cocked position by the camera release member. When the release member permits the impeller to move to its uncocked position, the latter strikes against the pin of a piezoelectric device to thereby fire a flash lamp or an electronic flash for artificial illumination of the subject. The lever is provided with an adjustable cam which is located in the path of movement of the impeller to its uncocked position so that the impeller engages the cam and disengages the lever from the shutter. The shutter opens a preselected interval of time ahead of the generation of artificial light, and the length of such interval is determined by the distance between the uncocked position of the impeller and that intermediate position in which the impeller engages the cam to disengage the lever from the shutter.

3,706,269
AUTOMATIC DIAPHRAGM DEVICE FOR INTERCHANGEABLE LENS FOR SINGLE LENS REFLEX CAMERA

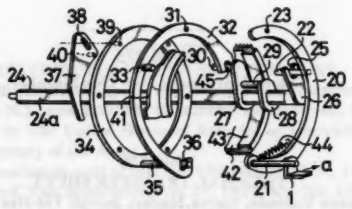
Kyozo Uesugi, Osaka Prefecture, Japan, assignor to Minolta Camera Kabushiki Kaisha, Minamiku, Osaka, Japan

Filed March 15, 1971, Ser. No. 124,131

Claims priority, application Japan, April 2, 1970, 45/32443

Int. Cl. G03b *9/07*

U.S. Cl. 95—64 B **3 Claims**



A rod **24** pivots inside a lens barrel. Movement of level **1** by depressing the shutter release allows link **20** to pivot. Pin **22**, fixed on the link drives lever **26** to pivot rod **24**. Lever **27** slides along rod **24** as the lens is extended but is fixed to move pivotably with the rod. to drive a second link **32**. The diaphragm blades are mounted on ring **34** which is rotated by the second link **32** through pin **35**. Cam **41** limits the travel of link **32** in accordance with the pre-set f-stop.

3,706,270
PRESSURE CONTROL SYSTEMS

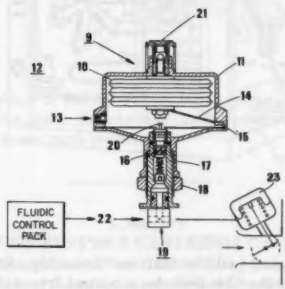
Owen Desmond Furlong, East Coker, England, assignor to Westland Aircraft Limited, Yeovil, Somerset, England

Filed Nov. 10, 1970, Ser. No. 88,377

Claims priority, application Great Britain, Dec. 9, 1969, 59,982/69

Int. Cl. B64d *13/04*

U.S. Cl. 98—1.5 **11 Claims**



In or for an enclosure pressure control system of the type wherein enclosure pressure varying means are operated by fluid pressure signals from a fluidic control pack, a fluid pressure controller or emergency pressure controller comprises an aneroid type capsule operating a valve at a preselected enclosure pressure to bleed away excess fluid pressure signals which would normally operate the pressure varying means, thereby maintaining a controlled pressure within the enclosure should malfunction of the normal fluidic control system occur. The capsule is in a closed chamber which communicates with the enclosure atmosphere through a resistive orifice, and the path of the bled pressure fluid passes through the chamber, whereby the resistive orifice introduces a negative feedback signal. The capsule is supported in the chamber by a spring loaded plunger which is manually actuatable from the exterior of the chamber to provide for ground tests of the device.

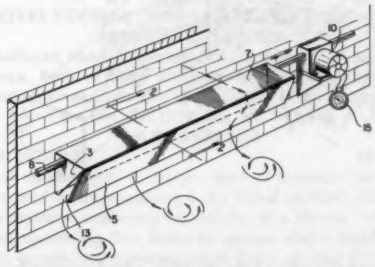
3,706,271
INLET CONTROL

Robert W. Mieczkowski, Tunkhannock, Pa.

Filed Feb. 12, 1971, Ser. No. 114,944

Int. Cl. F24f *7/00*

U.S. Cl. 98—41 **9 Claims**



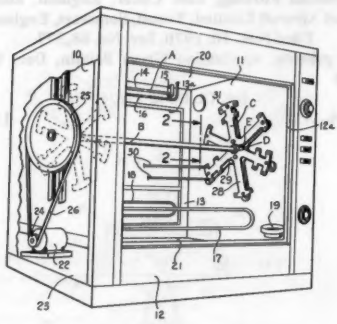
As auxiliary in a ventilating system, a control unit mountable against an air inlet contains a sloping face and means to adjust the face to control a throat for air flow at given pressure differentials of inside and outside air.

3,706,272

BARBECUE MACHINE EDIBLE CARRIER ASSEMBLY

Robert G. Wilson, 165 Faris Circle, Greenville, S.C.

Filed April 26, 1971, Ser. No. 137,224
Int. Cl. A47j 37/04
U.S. Cl. 99—340 2 Claims



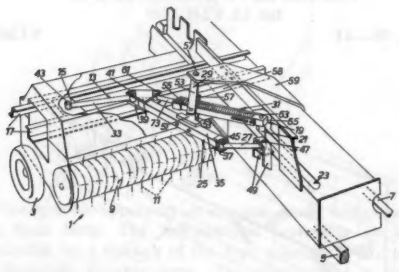
An improved edible carrier assembly for barbecue machines and the like, includes a central driven shaft having a support positioned upon the shaft adjacent each end thereof for positioning edible supporting means therebetween, and a channel within each of said supports extending radially from the shaft so that the supports may be removed therefrom allowing free access for cleaning the supports and adjacent surfaces.

3,706,273

FEED MECHANISM FOR HAY BALERS

Alexander Crawford, Warwick, England, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed May 20, 1971, Ser. No. 145,361
Claims priority, application Great Britain, June 18, 1970, 29,574/70
Int. Cl. B30b 1/00
U.S. Cl. 100—189 9 Claims



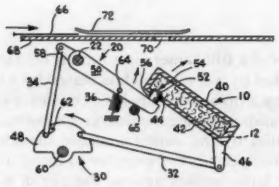
A hay baler with a bale chamber, a feed opening in one side wall of the chamber, a plunger in the bale chamber for compacting hay, a hay receiving platform extending laterally to one side of the bale chamber, a track mounted above the platform, a feeder carriage mounted on the track for movement along the track to convey hay from the platform and through the opening in one side wall of the chamber, and a drive transmission mechanism to reciprocate the feeder carriage. The drive transmission mechanism includes a resiliently extensible link pivotally connected at one end to the plunger, a floating link pivotally connected to the other end of the drive link, a connecting link pivotally interconnecting the floating link and the feeder carriage, and first and second swinging arms each pivotally connected at one end to the floating link at spaced apart positions along the length thereof and pivotally mounted on spaced apart pivot members on the bale chamber.

3,706,274

OSCILLATABLE INK PAD AND PRINT MEMBER

William W. Coville, Stamford, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Feb. 24, 1971, Ser. No. 117,919
Int. Cl. B41k 1/42
U.S. Cl. 101—333 3 Claims



A printing apparatus for use in printing with inks having a relatively highly volatile vehicle onto selected areas of a record sheet includes an ink storing means mounted for movement between a normal position and a remote position and comprises a porous absorbent material substantially enclosed in a body portion having a limited access opening disposed therein for admitting a printing means in ink contacting engagements.

The printing means is mounted for movement between a normal position and a printing position. An actuating means is operatively associated with the ink storing means and the printing means for producing a coordinated cyclical movement of the printing means and the ink storing means from their normal positions to the respective printing position and the remote position non-interferingly through interfering paths such that the ink storing means moves out of the path of the printing means before the printing means moves from the normal position to the printing position and the printing means returns to the normal position before the ink storing means returns to its normal position.

3,706,275

Patent Not Issued For This Number

3,706,276

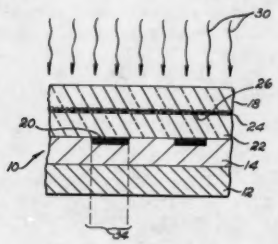
THERMAL TRANSFER SHEET

Yoshikazu Yamada, Sierra Madre; Joseph Tat-Hin Sund, Los Angeles, and Daniel R. Logue, San Gabriel, all of Calif., assignors to Bell & Howell Company

Filed Sept. 18, 1970, Ser. No. 73,522
Int. Cl. B41m 5/18
U.S. Cl. 101—453 7 Claims

A sheet for receiving a thermally formed design of material from a transfer sheet or the like of thermally transferable heat-

sensitive material. The surface of the receiving sheet is defined by material which has been formed under conditions yielding a reticulated, stippled or particulated texture thereby providing a plurality of spaced contacts for receiving the transferred material with a resolution of at least 5.0 line pairs per millimeter.



3,706,277

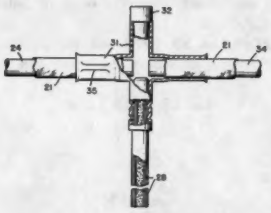
DESTRUCT SYSTEM IMPROVEMENT

Robert C. Willard; Jimme M. Craig, and Lloyd J. Jackson, all of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 28, 1970, Ser. No. 84,680

Int. Cl. F42b *19/08*

U.S. Cl. 102—27 R **2 Claims**



A pyrotechnic cord assembly is provided with voids for safety in handling and storage. The voids are filled with bridging pyrotechnic material at the time of final assembly.

3,706,278

DISTRIBUTED PROPULSION FOR GUNS

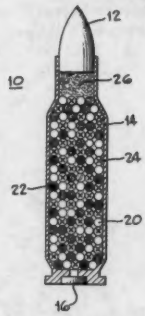
Ludwig Stiefel, Philadelphia, Pa.; Martin S. Silverstein, West Mount, N.J., and James F. Kowalick, Southampton, Pa., assignors to The United States of America as represented by the Secretary of the Army

Continuation-in-part of Ser. No. 818,140, April 21, 1969, abandoned. This application Feb. 25, 1971, Ser. No. 118,739

Int. Cl. F42b *5/16*

U.S. Cl. 102—38 **5 Claims**

Propellant charges for weapons, especially for the small caliber type, made of grains consisting of two layers, an outer slow burning composition and an inner or core composition for the control of interior ballistics. The charges consist of a plurality of increments of such type grains which differ in the thickness and composition of the outer layer and the thickness and composition of the core resulting in better control of interior ballistics, such, for example, as the obtention of higher velocities at lower peak pressure.



3,706,279

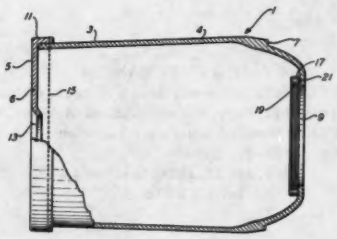
COMBUSTIBLE CARTRIDGE CASE

Theodore Zimmerman, West Caldwell, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 20, 1971, Ser. No. 107,910

Int. Cl. F42b *9/16, 9/24*

U.S. Cl. 102—43 R **5 Claims**



Two or more fully combustible components assembled to form a cartridge case by a fully combustible thread stitching adjoining portions of the components.

3,706,280

NOVEL COMBUSTIBLE CARTRIDGE CASE AND PROCESS THEREFOR

Jack Bobinski, Mountain Lakes, N.J., and Jean P. Picard, Morristown, both of N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed Dec. 29, 1970, Ser. No. 102,540

Int. Cl. F42b *5/02*

U.S. Cl. 102—43 **16 Claims**

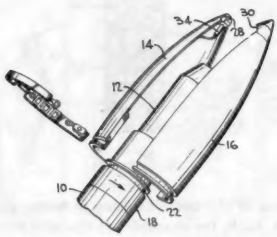
Novel combustible cartridge cases of superior properties are obtained by impregnating a dry felted preform, produced from a mixture consisting essentially of a fibrous cellulosic material containing free hydroxyl groups and a highly combustible organic nitro compound in finely divided form, with an organic polyisocyanate or other water insoluble resin precursor capable of reacting with the cellulosic hydroxyl groups, and thereafter forming the water-insoluble resin in situ.

3,706,281

METHOD AND SYSTEM FOR EJECTING FAIRING SECTIONS FROM A ROCKET VEHICLE

Lawrence F. Hatakeyama, Brookmont, Md., assignor to The United States of America as represented by the Administrator of National Aeronautics and Space Administration

Filed April 1, 1971, Ser. No. 130,353
Int. Cl. F42b *15/00*
U.S. Cl. 102—49.5 11 Claims



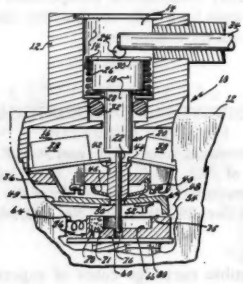
A method and system for deploying releasable clamshell fairing sections from a spinning rocket vehicle body, in which each fairing section is retained at its lower trailing edge portion, relative to the spin direction of the rocket, until it has been substantially despun and rotated outwardly from the rocket through a predetermined angle to thereby substantially eliminate the possibility of the fairing sections striking the vehicle payload. In a preferred constructional embodiment, a separable hinge unit is utilized connecting the lower trailing corner portion of each fairing section to the rocket vehicle body, whereby this portion will be the last to separate from the vehicle body and will be retained until the fairing section has rotated outwardly through the predetermined angle.

3,706,282

ABORT MECHANISM

Arthur M. Lohmann, Hopkins; King Spurbeck, Golden Valley, and Raymond H. Burg, Minnetonka, all of Minn., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Jan. 21, 1970, Ser. No. 4,643
Int. Cl. F42c *15/00*
U.S. Cl. 102—76 R 9 Claims



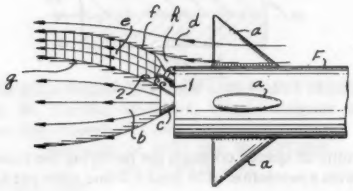
A fuze having an arming means, an actuating means, a firing mechanism, an abort catch, and a detonating means. The abort catch of this fuze is capable of preventing the detonation of the fuze under any premature impact. This abort action can take place at any time subsequent to removal of the safety pin and prior to the time the fuze is fully armed.

3,706,283

TRACER DEVICE FOR A ROCKET

Jean Marie Germain Bouisse, Cile Boisgelin; Charles Etienne Georges Martel, and Franck Pierre Antoine Villey-Desmeserets, both of 295-Pont de Bois, all of France, assignors to Etat Francais

Filed June 23, 1970, Ser. No. 49,054
Claims priority, application France, June 23, 1969, 6920265
Int. Cl. F42b *11/16*
U.S. Cl. 102—87 10 Claims



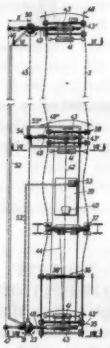
A tracer device is provided for a rocket and comprises at least one sheath arranged at the rear of the rocket and containing a pyrotechnical charge whose combustion produces a flame enabling the rocket to be followed along its trajectory. The sheath terminates in a convergent-divergent nozzle and the axis of the sheath is inclined with respect to the longitudinal axis of the rocket so as to direct the flame into the region comprised between the inside boundary of the air stream flowing behind the rocket and the outer boundary of the propellent gas jet.

3,706,284

TRACK WORKING APPARATUS WITH LASER BEAM REFERENCE

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, 1010 Vienna, Austria

Filed Jan. 19, 1970, Ser. No. 3,762
Claims priority, application Austria, Jan. 22, 1969, A 646/69
Int. Cl. E01b *33/00*
U.S. Cl. 104—7 B 56 Claims



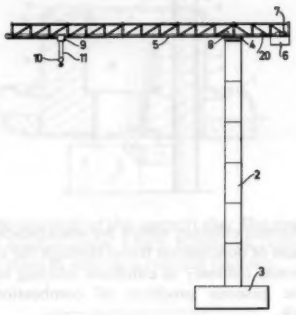
A laser beam reference or datum in a track surfacer, liner or surveying apparatus is intercepted by a mask or sensor which is held in a measurably fixed relationship to the grade rail. This sensor is connected with the track lining or leveling tool, or a track position recorder or signaling instrument, and control signals from the sensor in response to laser beam impingement thereon operate the respective tool or recording or signaling instrument.

3,706,285

HOISTING CRANE

Lars Gynt, and Lennart Holm, both of Vasteras, Sweden, assignors to Linden-Alimok AB, Vasteras, Sweden

Filed Jan. 18, 1971, Ser. No. 107,076
Claims priority, application Sweden, Jan. 27, 1970, 978/70
Int. Cl. B66c *23/62*
U.S. Cl. 104—124 **6 Claims**



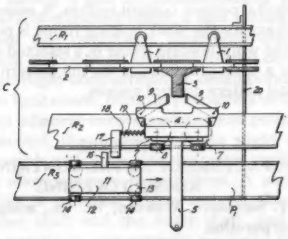
A hoisting crane of the type having a horizontal jib which is pivotally mounted on a vertical tower and supports thereon a movable carriage having a lifting means. The jib is formed of a plurality of detachably couplable modules each of which is formed of at least one upper and at least one lower member extending parallel to each other in the direction of the longitudinal axis of the jib. The longitudinal members of the respective modules all have the same spacing relative to each other so that all of the modules may be constructed with the same overall dimensions on a common jig. The modules which form a jib may have varying strengths to permit the modules which are closer to the pivotal mount on the tower to have a greater load-carrying capacity than those which are disposed toward the free end of the jib, and this is accomplished by having the associated members of some of the modules formed with a greater material cross-section than that of the corresponding members of other of the modules.

3,706,286

CONVEYOR SYSTEMS

Pierre Ricaud, 78 Chatou, and Simon Cynober, 75 Paris 11e, both of France, assignors to Jeumont-Schneider, Paris, France

Filed Dec. 31, 1970, Ser. No. 103,195
Claims priority, application France, Dec. 30, 1969, 6945392
Int. Cl. B65g *17/42*
U.S. Cl. 104—172 S **10 Claims**



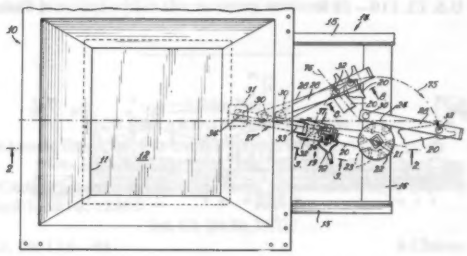
The invention is a conveying system formed of a first track having several load-bearing trucks movably mounted thereon, a second track which supports a driving chain continuously movable thereon and having several first dogs depending from the chain. The load-bearing trucks have a first abutment device which is engaged by the first dogs of the driving chain to be driven by it. There is a mechanism, on the trucks for disengaging the first abutment device from the first dogs so as to free the load-bearing trucks. The system also comprises a third track that carries at least one driving vehicle movable thereon at a speed greater than that of the load-bearing trucks and that has a second dog. The load-bearing trucks carry a second abutment device which can be hit by the second dog to actuate the disengaging mechanism and thus free the first abutment device from the dogs of the driving chain and allow the load-bearing trucks to be moved at a greater speed by the driving vehicle of the third track. The first abutment device of each load-bearing truck also has a provision whereby it may again be engaged by the first dogs of the driving chain if the speed of the load-bearing truck falls below that of the driving chain.

3,706,287

HOPPER OUTLET GATE ACTUATION MECHANISM AND AUTOMATICALLY ACTUATED LOCK

William E. Fritz, Hinsdale, Ill., and Clarence J. Koranda, Western Springs, both of Ill., assignors to The Youngstown Steel Door Company, Cleveland, Ohio

Filed July 30, 1971, Ser. No. 167,788
Int. Cl. B61d *7/20, 7/26;* **E05b** *65/18*
U.S. Cl. 105—282 R **18 Claims**



The sliding gate for a railway car hopper is operated between closed and open positions by a pivoted operating arm pivotally connected to a link pivoted to the gate. A lock pivoted to the link in locked position prevents pivotal movement of the link and operating arm until a sealing pin is moved to unsealing position and the lock is swung to an upright over center position. A nose portion on the lock is engaged by the operating arm and is moved upon opening the gate to pivot the lock to a reset position from which it gravitates to locking position when the gate is closed. Impact force applied to the hopper tends to close the gate accompanied by automatic movement of the lock to closed position and the sealing pin to sealing position.

3,706,288

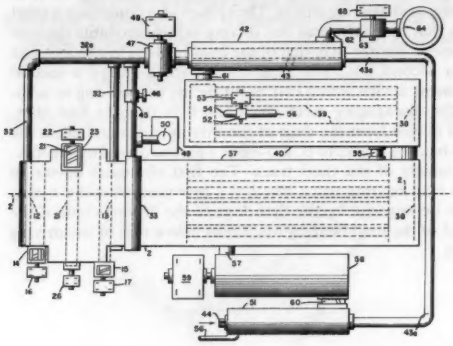
GENERATING SYSTEMS AND METHODS

Peterson, Adolphe C., Minneapolis, Minn., assignor to Garbalizer Corporation of America, Salt Lake City, Utah

Filed June 22, 1970, Ser. No. 48,189
Int. Cl. F23g *5/12*
U.S. Cl. 110—10 **16 Claims**

The method and apparatus for the conversion of pollution

contributing materials into non-pollution contributing substance and the utilization of the heat generated thereby for the generation of useful energy.



3,706,289

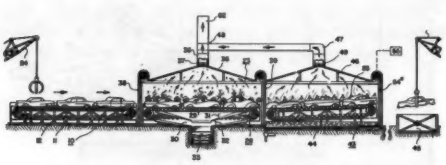
VEHICLE BODY-SHELL PROCESSING PLANT

John C. Brewer, Salt Lake City, Utah, assignor to Garbalizer Corporation of America, Salt Lake City, Utah

Continuation-in-part of Ser. No. 35,035, May 6, 1970, Pat. No. 3,613,562. This application June 25, 1971, Ser. No. 156,831

Int. Cl. F23g *7/00*

U.S. Cl. 110—18 R **4 Claims**



A vehicle body-shell processing plant is provided wherein vehicle shells are fired and quenched prior to baling in a manner such as to avoid air pollution difficulties. Exhaust gases from the furnace and quencher stages of the system are routed through an air cleaning system such that only clean gases are exhausted from the system. Quenching is done in the system such that steam, entrained particulate matter, and residual exhaust gases are conveyed to a gas scrubbing system for cleansing purposes. Independent conveyors are utilized at feed-in, furnace, and quencher points. The quencher conveyor is designed to have a sloping construction such that there can be an automatic and continuous process to shell bodies for each intermittent group processed.

3,706,290

SYSTEM FOR EXHAUSTING GASEOUS PRODUCTS OF COMBUSTION

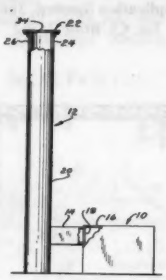
Frank J. Holland, 6513 North Le Mai Avenue, Lincolnwood, Ill.

Continuation-in-part of Ser. No. 804,527, March 5, 1969, abandoned. This application April 20, 1972, Ser. No. 245,808

Int. Cl. F23j *13/00*

U.S. Cl. 110—184 **7 Claims**

The instant system improves the efficiency of a combustion exhaust system and thereby improves the efficiency of a fuel combustion unit such as a boiler. A specific application of the invention includes a flat plate having an outer periphery sufficiently great to cover the entire opening at the top of a smokestack, which plate contains a sharp-edged circular orifice having an area less than the area of the opening at the top of the smokestack. The size of the orifice is such that it is substantially equal to the effective size of an exhaust port of a boiler connected to the smokestack. The orifice in the plate has its center aligned with the center line of the smokestack to create a thermal chimney within the smokestack, so that gaseous products of combustion travel through the central portion of the thermal chimney to eliminate eddying of substantially all of the gaseous products of combustion within the smokestack.



3,706,291

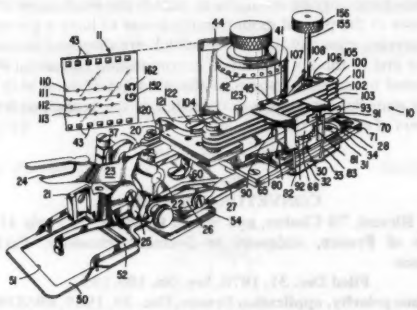
INCREMENTAL PATTERN CONTROL SYSTEM FOR SEWING MACHINES

Roger J. Ross, Roselle, N.J., assignor to The Singer Company, New York, N.Y.

Filed Aug. 26, 1971, Ser. No. 175,111

Int. Cl. D05b *3/24*

U.S. Cl. 112—77 **6 Claims**



A sewing machine work shifting mechanism is disclosed having a work holding frame which is shiftable in response to an incremental pattern control system. A manually influenced shifting means for the work holding frame is provided in order to locate the work holding frame in a selected starting position to provide a basis of reference for the pattern dictated by the incremental pattern control system.

3,706,292

MANUFACTURE OF METAL CONTAINERS WITH RIMMED OPENING

William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation

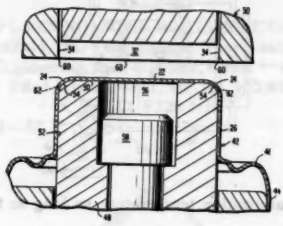
Filed Aug. 5, 1970, Ser. No. 61,312

Int. Cl. B21d *51/00*

U.S. Cl. 113—1 G **6 Claims**

An open-ended container is produced utilizing as a starting material a unitary drawn sheet metal container body which has a substantially circular endwall, a sidewall and a curved portion joining the two. This is achieved by full diameter blanking of the endwall. The blanking is carried out by the use

of cooperating support and cutting dies. The support die is contoured to the interior of the container body. The cutting die contains a uni-diameter recess bounded by a cutting edge



aligned with the sidewall of the support die. The resulting cut has a tapered configuration which facilitates curling of the sidewall in two steps to provide a rimmed opening.

3,706,293

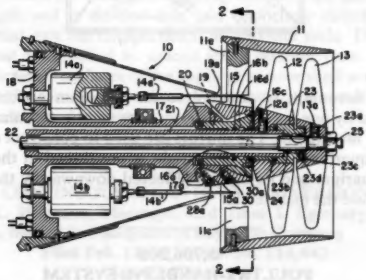
STEERABLE SELF-PROPELLED SUBMERSIBLE

Dorothy B. Hancks, and Stephen F. Moran, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Continuation-in-part of Ser. No. 745,633, July 17, 1968, Pat. No. 3,565,028. This application Aug. 27, 1970, Ser. No. 67,461

Int. Cl. F42b *19/01, 19/12*

U.S. Cl. 114—20 **3 Claims**



In a torpedo having a pair of counterrotating propellers mounted on coaxially-disposed shafts, a new sealing arrangement is provided that overcomes limitations encountered when combination carbon seals are used to shut out ambient water from a watertight compartment. Contemporary carbon seals exhibit two limitations; first, they require a critical axial pressure between adjacent carbon surfaces and polished wear surfaces, and second, they cannot tolerate slight axial displacement of the seals with respect to their wear surfaces since both conditions allow water to bypass them. A pair of shaft sealing assemblies is included which seal off the juncture between the inner shaft and the outer shaft, and a fitting reaches into the watertight compartment rendering the assemblies independent of axial pressures and slight axial excursions. An angularly displaceable shroud, used to change the direction of the torpedo, is carried on the socket portion of a ball-and-socket joint and is biased to a neutral position by a plurality of bolts carrying biasing springs, spaced in quadrature, to minimize frictional drag between the bolt faces and the socket.

3,706,294

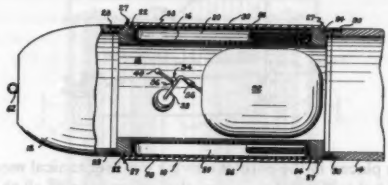
TORPEDO RECOVERY SYSTEM

James E. Radford, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 1, 1971, Ser. No. 111,391

Int. Cl. B63c *7/10;* **F42b** *19/36*

U.S. Cl. 114—20 R **1 Claim**



A recovery section for a test torpedo having a shape which conforms to the outer contour of the torpedo. An inflatable member is provided which when deflated extends circumferentially about the torpedo recovery section within the contour of the torpedo body and upon inflation assumes a toroidal shape and renders the torpedo positively buoyant causing it to rise to the surface. The inflatable member is formed of a material which tends to assume the original deflated configuration within the torpedo body upon actuation of a deflation device provided within the recovery section.

3,706,295

ICE BREAKING PASSIVE BOW

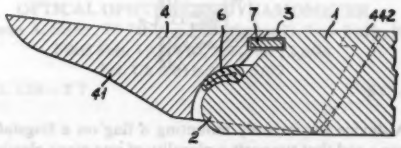
Emanuele Iozza, 30, Via Orsini, Genoa, Italy

Filed Jan. 11, 1971, Ser. No. 105,378

Claims priority, application Italy, March 18, 1970, 12554; April 2, 1970, 12592

Int. Cl. B63b *35/08*

U.S. Cl. 114—41 **6 Claims**



An ice breaking ship comprising a metallic ice breaking bow structure independent from the true ship bow structure, the ice breaking bow structure being connected to the ship bow in such a manner as to be free to slide and to rotate into a vertical plane within a certain angle with respect to the ship bow, means being provided for rigidly securing the said ice breaking bow to the ship bow structure during the inefficiency periods of the said ice breaking bow.

3,706,296

SAILBOAT

Karl F. Milde, Jr., 198 Baltic Street, Brooklyn, N.Y.

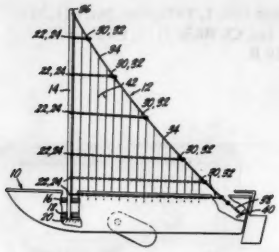
Filed July 28, 1970, Ser. No. 58,774

Int. Cl. B63h *9/04*

U.S. Cl. 114—102 **11 Claims**

A sail, suitable for use on a sailboat, iceboat or the like, comprising a number of vertically arranged, parallel, rigid

strips. The cross-section of each strip has at least one curved side and is designed to produce the maximum lateral force



when placed in the path of moving air. Mechanical means are provided to control the azimuthal orientation of all the strips with respect to the direction of air movement.

3,706,297

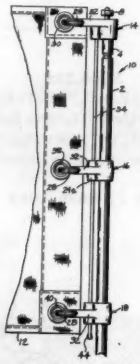
FLAGSTAFF SWIVEL

Robert W. Voorhees, Cedar Falls, Iowa, assignor to Standard Manufacturing Company, Cedar Falls, Iowa

Filed June 28, 1971, Ser. No. 157,470

Int. Cl. G09f *17/00*

U.S. Cl. 116—174 **5 Claims**



A device for swivelly mounting a flag on a flagstaff comprises a rod that supports a plurality of one piece plastic members. Each member has a first bore and a second bore for receiving the rod. The rod positions the several members so that the aforesaid first bores are in alignment for swivel engagement with the flagstaff. Each member also integrally includes a hook with a spring tongue for opening and closing the hook. The hooks are engageable with eyelets on a flag, and a number of the members are relatively adjustable along the lengths of the rod to accommodate varying eyelet spacings of different flags.

3,706,298

HEATED ADHESIVE APPLICATOR ROLL SYSTEM

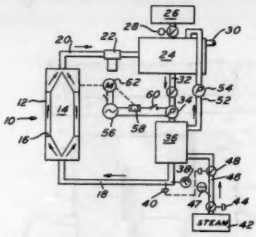
Charles R. Norman, Willingboro, N.J., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed May 20, 1970, Ser. No. 38,950

Int. Cl. B05c *11/00*; **F28f** *5/02*

U.S. Cl. 118—5 **7 Claims**

The adhesive roll of a single facer machine and/or the adhesive rolls of a glue machine at a double facer are heated to a surface temperature of between 130°F and 150°F by circulating water to heat the starch adhesive to a temperature just



below its gelatinization temperature so long as the rolls are rotating.

3,706,299

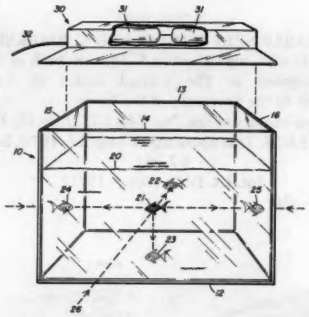
MIRRORED MARINE AQUARIUM

Louis W. Hendges, Rt. 3, Box 291, Old Emmorton Road, Belair, Md.

Filed July 22, 1971, Ser. No. 165,287

Int. Cl. B65d *13/02*; **A01k** *63/00*

U.S. Cl. 119—5 **2 Claims**



This invention is directed to an aquarium which is illuminated by one-way and two-way glass mirrors to enhance the marine life therein. The mirrors are used to construct a watertight aquarium. A concealed light is positioned in the top of the aquarium and its light is reflected downwardly therein to illuminate the marine life.

3,706,300

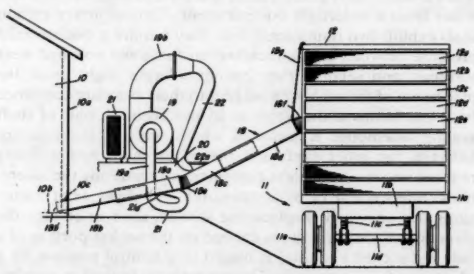
POULTRY-HANDLING SYSTEM

Lon H. Wessinger, 439 Longview Street, Carrollton, Ga.

Division of Ser. No. 801,507, Feb. 24, 1969, Pat. No. 3,568,643. This application Feb. 1, 1971, Ser. No. 111,350

Int. Cl. A01k *1/00*

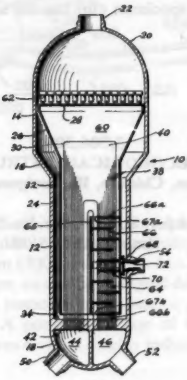
U.S. Cl. 119—15 **4 Claims**



Method and apparatus for handling poultry by transferring the same from poultry house to processor by way of bins into

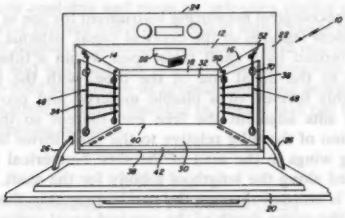
which the poultry is urged for transport by a combination of suction and then air under pressure, from which bins the poultry is unloaded by air pressure at the processor.

3,706,301
INTEGRAL ECONOMIZER FOR U-TUBE GENERATOR
Scott R. Penfield, Jr., Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed July 13, 1971, Ser. No. 162,093
Int. Cl. F22b *1/16*
U.S. Cl. 122—32 **16 Claims**



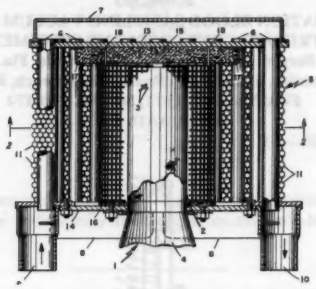
An economizer compartment for a shell and tube vapor generator is disclosed in which the cold feedwater to be heated enters the compartment at an intermediate point along its length and is divided into two oppositely directed flow paths that exit the compartment at opposite ends. The compartment is disposed in spaced-apart relation from the adjacent interior surfaces of the vapor generator shell in order to protect the same against thermal shocking as a result of contact by unheated feedwater.

3,706,302
CONTINUOUS CLEAN OVEN CONVERSION
Peter L. Helgeson, Macungie, and Tibor I. Egervary, Allentown, both of Pa., assignors to Raytheon Company
Filed Feb. 11, 1971, Ser. No. 114,442
Int. Cl. F24c *15/16*
U.S. Cl. 126—19 R **11 Claims**



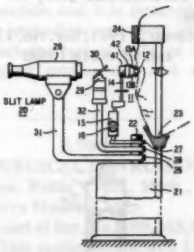
A continuous clean oven embodying a conventional oven liner having as accessories superimposed removable back, bottom and side panels coated with material which provides continuous clean characteristics, and means for retaining the panels in place.

3,706,303
COMPACT HEAT EXCHANGER WITH HIGH INTENSITY BURNER
William H. Hapgood, Brookline, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Feb. 17, 1970, Ser. No. 12,000
Int. Cl. F24c *3/04*
U.S. Cl. 126—116 R **6 Claims**



A high intensity burner for burning a carbonaceous fuel in an oxygen containing atmosphere has one or more ports through which the fuel emerges and adjacent which complete combustion of the fuel occurs within a limited combustion region at a temperature above the dissociation temperature of CO_2. A heat exchanger, which is maintained at a temperature below the recombination temperature of CO and O_2, is located outside the limits of said combustion region but sufficiently close to the burner ports so that, at the normal operating velocity of the burned gases these gases would reach the heat exchanger before the temperature of the gases had dropped below the dissociation temperature and into the recombination temperature range, except for the fact that a screen is located between the limits of the combustion region and the heat exchanger, and is heated by the gases, thereby extracting heat from the gases, to a temperature at which it radiates energy, thus reducing the temperature of such gases into the recombination temperature range before they reach the heat exchanger.

3,706,304
OPTICAL OPHTHALMODYNAMOMETER
Hampson A. Sisler, 77 7th Ave., Penthouse H, New York, N.Y.
Filed Feb. 19, 1970, Ser. No. 12,604
Int. Cl. A61b *3/00, 5/02*
U.S. Cl. 128—2 T **5 Claims**



The disclosed ophthalmodynamometer, an instrument for measuring the dynamic opthalmic artery blood pressure, is herein called an optical ophthalmodynamometer because it provides coincident axes of pressure application and visual observation of the characteristic arterial pulsations at measurement of systole and diastole. This instrument is advantageously and readily adapted as an additional attachment for the versatile slit lamp, which is a basic instrument used for

eye examination and does not require an assistant for the examiner. The pressure is applied through a fundus lens mounted in a hollow cylindrical member, the axis of which is the axis of observation and through which illumination can be supplied and received paraxially without interferring with the observation. The diameter of the fundus lens is selected to be in the range from about 6 millimeters to about 10 millimeters.

3,706,305

COMBINATION BLOOD SAMPLING VACUUM SYRINGE CENTRIFUGE CONTAINER AND SPECIMEN CUP

Harold J. Berger, 8867 Froude Ave., Surfside, Fla., and Jerry G. Goldsmith, 5225 N. Bay Road, Miami Beach, Fla.

Filed March 3, 1971, Ser. No. 120,474

Int. Cl. A61b *10/00*

U.S. Cl. 128—2 F **15 Claims**

An elongated, unitary, blood sampling vacuum syringe, centrifuge container and specimen cup, for use with an ordinary tubular needle holder is described. The device includes an evacuated blood sample centrifuge container within one end and an evacuated specimen cup within the other end of a common tubular housing member. A transfer needle coaxially arranged within the housing member between the centrifuge container and the specimen cup effects transfer of the blood serum, after centrifuging, from the centrifuge container to the specimen cup through piercable diaphragm closure caps at the inner or facing ends thereof. Means is provided for breaking away of the specimen cup end of the common housing member for ready removal of the serum-filled specimen cup for use in analysis.

3,706,306

COMBINATION BLOOD SAMPLING VACUUM SYRINGE CENTRIFUGE CONTAINER AND SPECIMEN CUP

Harold J. Berger, Surfside, and Jerry G. Goldsmith, Miami Beach, both of Fla.

Filed March 3, 1971, Ser. No. 120,475

Int. Cl. A61b *10/00*

U.S. Cl. 128—2 F **7 Claims**

An elongated, unitary, blood sampling vacuum syringe, centrifuge container and specimen cup, for use with an ordinary tubular needle holder is described. The device includes an evacuated blood sample centrifuge container having a piercable diaphragm cap and being supported in spaced relation within one end of a housing member, the opposite end of which housing member is in the form of a separable specimen cup. After obtaining a blood sample in the usual fashion with use of an ordinary tubular needle holder, the device is centrifuged as a unit to separate the blood serum into the upper end of the centrifuge container. Vertically spaced openings provided in an upper side wall portion the centrifuge container and normally sealed off by means of a pressure-sensitive tear strip, are thereafter sequentially opened by manual removal of the tear strip to permit gravitation of the centrifuged blood serum down into the specimen cup, after which said serum-filled specimen cup can be separated for use in analysis.

3,706,307

GYNECOLOGICAL INSTRUMENT

Harrith M. Hasson, Chicago, Ill., assignor to Hollister Incorporated

Filed July 8, 1970, Ser. No. 53,084

Int. Cl. A61b *5/00*

U.S. Cl. 128—2 S **14 Claims**

A gynecological measuring instrument for use in measuring anatomical features of the cervical canal, isthmus and uterus characterized by a shaft telescoped within a tube and connected to the distal end of the tube, with the tube being preferably formed of a pliable material and provided with spaced slits adjacent the free end thereof so that relative retraction of the tube relative to the shaft forms laterally extending wings in the area of the slits. Numerical indicia are provided along the length of a body for the shaft. When the device is inserted through the cervical canal to the top of the uterus the entire depth of the cervical canal and endometrial cavity can be measured. When the tube is retracted relative to the shaft and then the entire assembly is retracted until the isthmus is located, the difference between the two dimensions may be measured, indicating the individual length of each of the cervical canal and the endometrial cavity. Anatomic features of the cervical isthmic junction, including competence, also may be assessed.

3,706,308

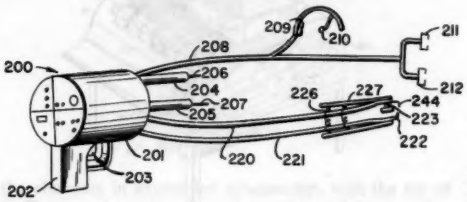
LIFE DETECTING MEDICAL INSTRUMENT

Erwin Roy John, Riverdale, and Robert Laupheimer, Westbury, both of N.Y., assignors to Neuro-Data, Inc., Cliffside Park, N.Y.

Continuation-in-part of Ser. No. 782,863, Dec. 11, 1968, abandoned. This application Oct. 19, 1970, Ser. No. 81,653

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.06 R 4 Claims



An electronic medical instrument to detect the presence or absence of life includes an electroencephalograph (EEG) and an electrocardiogram (EKG), connected to one or more data scanners, a stimulator, an analog or digital data analysis device such as an average response computer, a graphic recorder, and a time stamp. A portable version of this instrument is hand-carried and gives a visual display indicating the presence or absence of life.

3,706,309

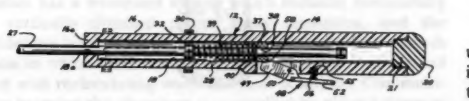
DEVICE FOR APPLYING AND RELEASING PRESSURE

Irwing N. Toftness, 1425 Second Ave., Cumberland, Wis.

Filed April 29, 1971, Ser. No. 138,711

Int. Cl. A61f *5/00*

U.S. Cl. 128—69 1 Claim



A pressure applying and pressure releasing device consisting of a spring pressed rod in connection with a gauge to apply a measured degree of pressure by means of said rod against a given area and said rod has in connection therewith a stop member to hold said rod in its pressure applying position and means to actuate said stop member to release said rod from its pressure applying position.

3,706,310

HANGING SLING FOR ARM CAST

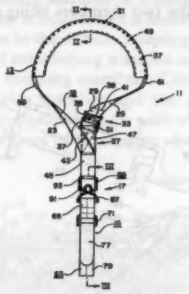
Robert E. Garnett, Memphis, Tenn., assignor to Richards Manufacturing Company, Memphis, Tenn.

Filed June 24, 1970, Ser. No. 49,336

Int. Cl. A61f *5/40*

U.S. Cl. 128—94 9 Claims

A hanging sling for arm casts. The sling has a neck portion including polyurethane open cell foam material padding attached to a flexible web that extends around the patient's neck. An arm portion of the sling is detachably connected to



the neck portion and includes a loop which is adjustable in size to fit either imbeddedly in the cast or around the outside thereof.

3,706,311

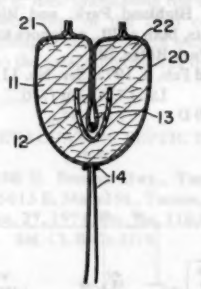
SELF-SPREADING CATAMENIAL TAMPON

Darrel D. Kokx, Greenhills, and Robert S. Moore, Wyoming, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 27, 1970, Ser. No. 93,306

Int. Cl. A61f *13/20*

U.S. Cl. 128—285 12 Claims



A self-spreading catamenial tampon made from a bundle of uncompressed absorbent material and a mechanical spreader inside the bundle which immediately spreads the folded legs of the tampon when the tampon is ejected from an inserter. The tampon is oriented within the vagina so that its spreading will be in a lateral direction and it is inserted just above the introital region. The immediate spreading allows the tampon to immediately contact the lateral walls of the vagina thereby spanning the vaginal passageway and minimizing bypass failures.

3,706,312

SURGICAL INSTRUMENT

Frederick J. Melges, Battle Creek, Mich., assignor to Rymel Corporation, Sierra Madre, Calif.

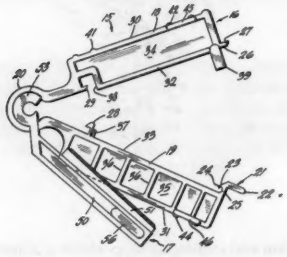
Continuation-in-part of Ser. No. 780,463, Dec. 2, 1968, Pat. No. 3,566,873. This application March 13, 1970, Ser. No. 19,329

Int. Cl. A61b *17/326, 17/08*

U.S. Cl. 128—305 7 Claims

A surgical instrument is provided which is particularly suited for use in circumcision operations, comprising a clamping and holding member adapted to be readily formed of molded plastic material and especially constructed for use in the place of circumcision operations normally involving the

use of conventional hospital instruments such as a probe, scalpel, and hemostat. In a preferred form the instrument includes in combination with the clamping and holding member, a cutting member, the two members being pivotally connected



together and guided in cooperative operation position, and which instrument is sufficiently inexpensive so that it can be discarded after the end of the operation thereby obviating the need of sterilization for reuse.

3,706,313

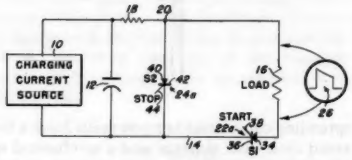
TRAPEZOIDAL WAVESHAPE DEFIBRILLATOR

Dean L. Milani, Highland Park, and Richard G. Kerwin, Prospect Heights, both of Ill., assignors to Medical Research Laboratories, Park Ridge, Ill.

Filed Feb. 4, 1971, Ser. No. 112,587

Int. Cl. A61m 1/36

U.S. Cl. 128—419 D **10 Claims**



A trapezoidal waveshape, which is known to be the best waveshape for defibrillating the heart, is produced by charging a capacitor, and by starting to discharge it through a silicon controlled rectifier to the load, namely, the body of the patient. Subsequently, a second SCR is used to short circuit the first SCR and load circuit to effect termination of the trapezoidal waveshape rapidly, i.e., effectively dumping the remainder of the charge.

3,706,314

TOBACCO THRESHING APPARATUS AND METHOD

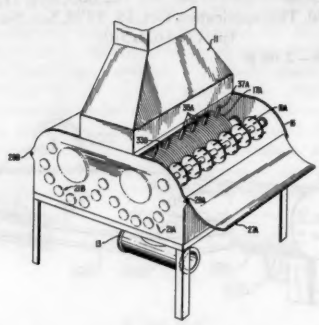
Robert A. Smith, Jr., Richmond, Va., assignor to Superior Tobacco Machinery & Sheet Metal, Inc., Richmond, Va.

Filed July 2, 1970, Ser. No. 51,881

Int. Cl. A24b 05/10

U.S. Cl. 131—145 **20 Claims**

A tobacco thresher includes two systems of rotating teeth each of which intermeshes with a separate rotating disc system. The disc systems comprise separated coaxial rotating discs which have pins mounted on the sides thereof. The teeth rotate at a greater angular velocity than their associated rotating disc systems; and the angular velocities of the two rotating disc systems can be independently varied.



The teeth are elongated to drive the tobacco along a path while the tobacco is simultaneously restrained by the movable pins which are disposed in a cross-wise attitude with respect to the teeth.

3,706,315

HAIRWINDER

Bent Georg Johansen, Kalundborg, Denmark, assignor to Bristol-Myers Company, New York, N.Y.

Filed June 25, 1971, Ser. No. 156,743

Claims priority, application Denmark, June 29, 1970, 3361/70

Int. Cl. A45d 2/14

U.S. Cl. 132—33 R **4 Claims**

A hairwinder having radially flanges at the end adapted for ease of handling and for minimizing tangling when the hair is unwound. The hairwinder is provided with fin or tongue-like projections which are of varying height and which lie in planes transverse to the longitudinal axis with end edges forming an angle of 90° or more with the tangential plane of the curved outer surface through the base point of the end edge.

3,706,316

NAIL BUFFER

Shogo Ishii, Tokyo, Japan assignor to Syntak Company, Ltd., Tokyo, Japan.

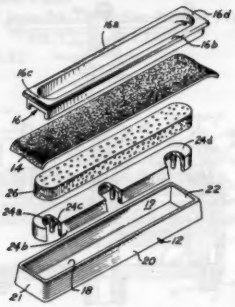
Filed Nov. 1, 1971 Ser. No. 194,715

Int Cl. A45d 29/20

U.S. Cl. 132—76.5 **9 Claims**

A buffer comprised of an open-topped housing, a support adapted to be retained in the housing, a buffing member

made from fabric, a resilient backer between the buffing member and support, and a retaining member for securing the buffing member tightly drawn over the support and holding the elements in assembled relationship, with the top of the buffing member extending above the retaining member and housing.

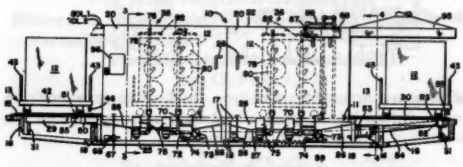


3,706,317

MODULE TREATING APPARATUS

Gerald B. Fox; Wray E. Dudley, and Stuart E. Athey, all of Troy, Ohio, assignors to The Hobart Manufacturing Company, Troy, Ohio

Filed Aug. 3, 1970, Ser. No. 60,237
Int. Cl. B08b *3/02*
U.S. Cl. 134—57 DL **11 Claims**



Food storage modules, tray carts, and other large food handling equipment are sequentially subjected to timed washing and rinsing treatments as they are intermittently conveyed on dollies through a wash chamber and a rinse chamber. Each chamber has a treatment station which includes horizontally and vertically directed power spray apparatus, and the modules are intermittently stopped for relatively short periods of time in which their interiors and exteriors are washed and rinsed with recirculating wash and rinse solutions. Communication between the chambers is controlled by pivotal doors at the inlets and outlets of each chamber which operate in timed sequence with the washing and rinsing operations. The pivotal doors substantially seal the chambers during the power spray operations and minimize intermixing of the wash and rinse solutions. After the simultaneous power sprays in each chamber are completed, the modules are subjected to a hot rinse by separate horizontal and vertical spray apparatus as they are conveyed out of the rinse chamber. Sequencing of the conveyor is controlled from positioning of a dolly at a discharge station.

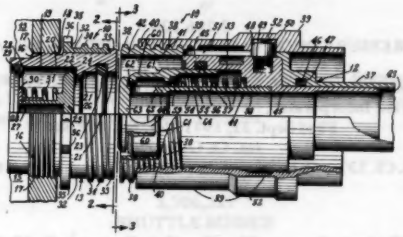
3,706,318

FLUID COUPLING

Mahmood Baniadam, Manhattan Beach, and Jorge A. Morando, Burbank, both of Calif., assignors to Fairchild Industries, Inc., Germantown, Md.

Filed March 2, 1971, Ser. No. 120,286
Int. Cl. F16l *37/28*
U.S. Cl. 137—614.03 **7 Claims**

A fluid coupling with separable male and female coupling members including a threaded connecting member on the male member which advances when rotated to engage a threaded collar on the female member. The axial movement of the advancing connecting member is translated through rollers or studs to a probe which carries a mating sleeve into engagement with a bore in the female coupling member engaging a mating seal and establishing a sealed interface between the male and female coupling members. Continued advancement of the connecting member and the probe results in movement of the sleeve establishing a path of fluid communication between the interior of the mating sleeve and the bore of the female coupling. Further advancement of the connecting member brings the probe into contact with a poppet valve within the female coupling unseating the popped valve and establishing an uninterrupted fluid communication path between the male and female coupling members. Rotation of the actuating sleeve in the opposite direction reverses the action of the components in sequence, first interrupting the fluid flow and entrapping it, then uncoupling the male and female members. The construction of the fluid coupling permits coupling and uncoupling of the members within a fixed space which corresponds to the axial dimension of the coupling.

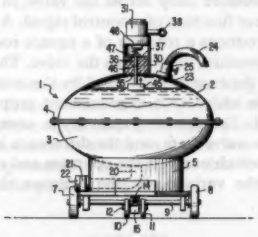


3,706,319

APPARATUS FOR EVACUATING SEPTIC TANKS OR THE LIKE

John W. Neese, 1350 E. Benson Hwy., Tucson, Ariz., and James E. Gaylor, 5613 E. Mabel St., Tucson, Ariz.

Filed Jan. 27, 1971, Ser. No. 110,016
Int. Cl. B67c *3/16*
U.S. Cl. 137—205 **11 Claims**



A portable apparatus for evacuating the liquid sewage from holding tanks, septic tanks and the like having a sewage tank which is mounted on a support frame which includes a transport arrangement, e.g., A WHEELED VEHICLE. The sewage tank is provided with a discharge opening, which is normally closed by means of a valve, at the lower end thereof and a sewage inlet at the upper end thereof to which is removably connected a length of flexible hose. A vertically oriented cylindrical housing is mounted on the upper surface of the sewage tank and an electrically powered vacuum or suction pump is removably mounted on the upper end of the housing so that upon actuation of the pump the air in the sewage tank can be withdrawn via the housing. To protect the pump from

the sewage and to trap the fumes, a filter is removably mounted in the cylindrical housing. The sewage tank is also provided with a sewage level detecting device, e.g., a float and a switch responsive thereto, for de-energizing the pump when the level of sewage in the tank has reached a predetermined level indicating the tank is essentially full. Preferably, a gasoline engine driven electrical generator is provided on the frame in order to supply power to the pump.

3,706,320

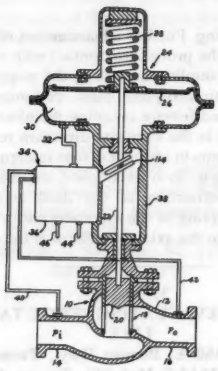
PRESSURE DROP VARIATION COMPENSATING AND VALVE POSITIONING MECHANISM

Manmohan S. Kalsi, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Sept. 21, 1971, Ser. No. 182,344

Int. Cl. G05d *7/03*

U.S. Cl. 137—487 **8 Claims**



A valve having a pneumatic operator and a linear port opening rate is provided with mechanism for compensating variations in the pressure drop across the valve, in order to make the flow a linear function of a control signal. A pressure sensitive device produces a rotation of a square root cam proportional to the pressure drop across the valve. The displacement produced by the cam is multiplied by the control signal and the product is added to a displacement proportional to the control signal. The resulting quantity is compared with the position of the valve stem, and the difference is used to adjust a pilot valve which controls the operator and resets it so as to compensate the variation in the pressure drop across the valve.

3,706,321

MANUAL OVERRIDE INDICATOR FOR GATE VALVE

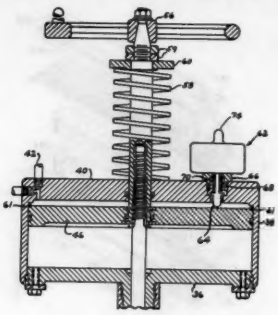
Felix J. Vicari, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Sept. 21, 1971, Ser. No. 182,343

Int. Cl. F16k *37/00, 3/02*

U.S. Cl. 137—554 **6 Claims**

A visual indicator or signal for indicating when the manual override is being employed in a fluid operated gate valve. The manual override is employed to open the gate valve upon a malfunctioning of the fluid system and the indicator shows when the manual override is being employed. The signal is energized upon the initial actuation of the manual override and remains energized until the gate has returned to its full closed position under the manual override in which position the gate valve may return to its fluid operation.



3,706,322

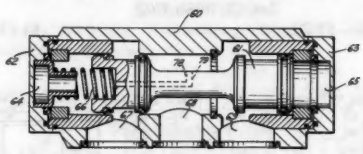
VALVE

Carl M. Carlson, 344 12th St., Cresskill, N.J.

Filed March 22, 1971, Ser. No. 126,669

Int. Cl. F16k *11/00*

U.S. Cl. 137—625.66 **6 Claims**



A pressure actuated spool-type fluid valve in which the spool is shifted by the pressurized fluid with or without the assistance of mechanical spring means.

3,706,323

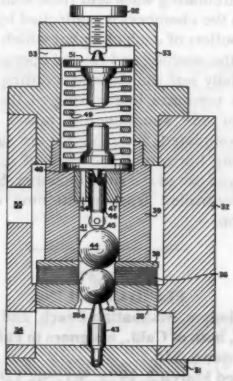
BALL FLOW CONTROL VALVE

Paul F. Hayner, Lexington, Mass., and David G. Eldridge, Nashua, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 27, 1970, Ser. No. 93,309

Int. Cl. F16k *31/143, 1/14*

U.S. Cl. 137—625.3 **14 Claims**



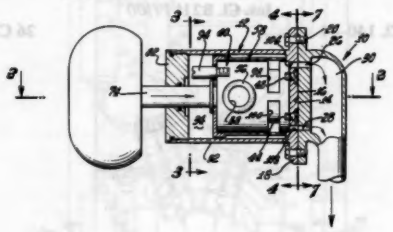
A fluid flow control valve in which the element which variably impedes the flow of fluid therethrough is a ball, the position of which is controlled by a second ball in rolling engagement therewith.

3,706,324

SINGLE-HANDLE HIGH VOLUME TUB FILLER

John K. Lyon, Pasadena, Calif., assignor to Price-Pfister Brass Mfg. Co., Pacoima, Calif.

Filed June 29, 1970, Ser. No. 50,776
Int. Cl. F16k 11/00
U.S. Cl. 137—625.41 3 Claims



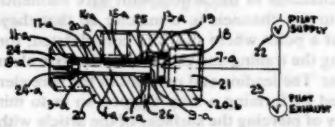
A cup-shaped recess has four circularly arrayed ports, hot and cold inlet ports on opposite sides and two outlet ports in quadrature relationship. A valve post projects from and registers with the four ports. The post provides laterally opening hot and cold water openings at its outer end controlled by a cylindrical valve member, and at its outer end a pair of slots. The post has large passages establishing the requisite communication between the four ports, the hot and cold water valve-controlled openings and the slots.

3,706,325

SIMPLE CONTROL VALVES

Richard S. Pauliukonis, 6660 Greenbriar Dr., Cleveland, Parma Heights, Ohio

Filed May 21, 1971, Ser. No. 145,751
Int. Cl. F16k 11/02
U.S. Cl. 137—625.66 11 Claims



Simple fluid power control valves for use with pneumatic and/or hydraulic pressurized working fluids, of springless valve construction whose central longitudinal bore slidably receives a pin which is permanently secured with appropriate seals to allow it to float axially inside the bore, from a one closed position when the pin end with seal is subjected to the fluid pressure of the working fluid at the infeed valve end, to another open position when the opposing pin end is subjected to an external force which is greater than the fluid pressure end thrust at the infeed pin end, said external force being caused by pin actuation manually, by toggle, hand or foot lever, by a timer cam or by pilot pressure, said pin floating with seals, allowing for fast valve response as a result of short travel designed therein.

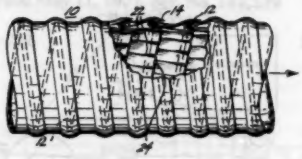
3,706,326

FLEXIBLE CONDUIT

Richard G. Bringolf, 550 S. Monroe Street, Seattle, Wash.

Filed July 9, 1971, Ser. No. 161,080
Int. Cl. F16l 11/10
U.S. Cl. 138—129 9 Claims

Enhanced flexibility of a wear-resistantly lined conduit, reinforced by a spiroid incorporated in the structure, is accomplished by employing internally a continuous spirally-configured, partially unattached, supple liner serving to shield the internal peak portions of the conduit related to the spiroid from wear caused by the passage through the conduit of abra-



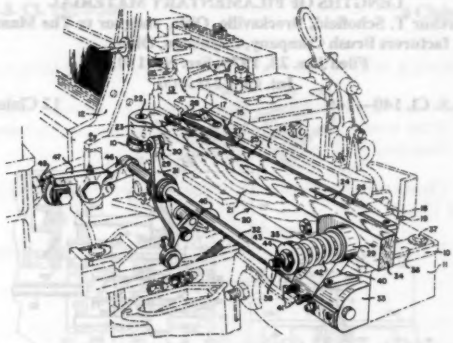
sive-particle-laden air and other gaseous streams. Suppleness of the liner is further enhanced by dividing a trailing portion of the liner into separate leaf-like portions.

3,706,327

SHUTTLE BINDER

Joseph M. Budzyna, East Douglas, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed June 21, 1971, Ser. No. 154,921
Int. Cl. D03d 49/56
U.S. Cl. 139—187 3 Claims



An improved binder for the shuttle checking mechanism of a loom having first and second body portions with a first biasing means effective upon one of the body portions to receive the impact of a shuttle as it enters a shuttle box. A second controllable biasing means for arresting the shuttle within the box and releasing it for picking from the box.

3,706,328

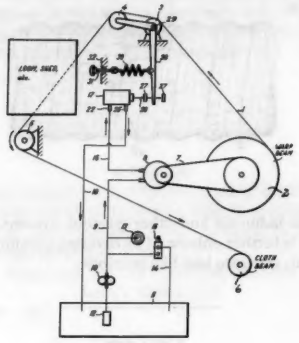
DEVICE FOR THE CONTINUOUS AND AUTOMATICALLY CONTROLLED DRIVING OF WARP BEAMS AND SIMILAR DEVICES BEARING A YARN SUPPLY

Pravomil Dostal, Rychnov nad Kneznou, Czechoslovakia, assignor to Elitex Zavody textilniho strojirenstvi generalni redirelstvi, Liberec, Czechoslovakia

Filed Aug. 19, 1970, Ser. No. 65,114
Claims priority, application Czechoslovakia, Sept. 5, 1969, 6090/69
Int. Cl. D03d 49/06
U.S. Cl. 139—110 7 Claims

Device for continuously and automatically controlling the drive of warp beams and like. A hydraulic motor is provided

for driving the warp beam, the motor being under the control of a valve which is operated by a tension sensitive device



which detects the tension in the threads being paid off the beam.

3,706,329

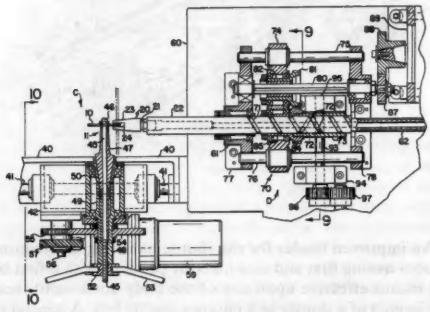
METHOD AND APPARATUS FOR INTERTWISTING LENGTHS OF FILAMENTARY MATERIAL

Arthur T. Schofield, Brecksville, Ohio, assignor to The Manufacturers Brush Company, Cuyahoga, Ohio

Filed Jan. 28, 1971, Ser. No. 110,531

Int. Cl. B21f 7/00

U.S. Cl. 140—149 **12 Claims**



A method and apparatus for intertwisting lengths of relatively stiff, deformable monofilament or multifilament material to form a stranded segment, such as to form the intertwisted ends or legs of a wire bundle comprising a portion of the bristles of a wire brush. The twisting is accomplished by gripping each length to be twisted at one end in a stationary gripping mechanism and slidably holding the lengths in a rotatable twisting head that locates the respective portions of the lengths that are held thereby in fixed relation to one another and symmetrically spaced about the axis of rotation of the twisting head. The twisting head is initially moved axially to a predetermined axial spacing from the gripping mechanism and when the desired spacing is achieved the twisting head is rotated through a predetermined angle to intertwist the lengths. When the rotation is stopped the steps are then repeated sequentially until the lengths are intertwisted a desired number of helical convolutions.

3,706,330

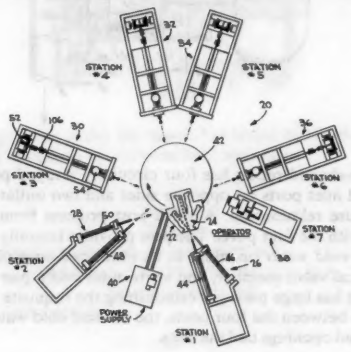
METHOD AND MEANS FOR PROVIDING SUBSTANTIALLY CONTINUOUS RESILIENT ARTICLE WITH BENDABLE SKELETON AND RESULTANT ARTICLE

Glenn K. Rightmire; Alfred T. Bossler, both of Closter; Arthur E. Burnell, Demarest, and August R. Helms, Irvington, all of N.J., assignors to Jacob J. Rosen, New York, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,253

Int. Cl. B21f 17/00

U.S. Cl. 140—1 **26 Claims**



A method and means for providing a substantially continuous resilient article such as a foamed plastic doll body or the like with a bendable wire skeleton, particularly useful when the article in question is substantially seamless in nature and must be removed from a mold through a limited opening so that the wire skeleton could not be incorporated in the article during the molding operation. Means are provided for initially forming channels in the article with wire elements being inserted into the channels in a manner so that they generally overlap at a point where they are consolidated, for example, by twisting the trailing end portions of the wire elements upon each other. The leading end portions of the wire elements may be blunted by forming a loop thereon so as to minimize the possibility of piercing the surfaces of the article with relatively sharp wire tips which could cause injury in use of the article. Additionally, the twisted trailing end portions of the article may be looped and if a doll body or the like is being provided with the bendable wire skeleton a hollow head portion may be attached to the doll body in a conventional manner thereby covering the consolidated trailing end portions of the elements so that the wire skeleton is completely internal of the final article.

3,706,331

METALLIC CAGE STRUCTURE AND APPARATUS FOR MANUFACTURING SAME

John Stanley Pennington, Retford, England, assignor to British Steel Corporation, London, England

Filed Jan. 5, 1971, Ser. No. 104,076

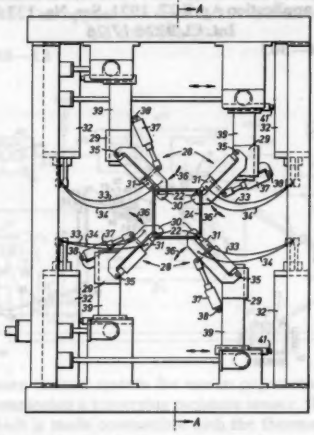
Claims priority, application Great Britain, Jan. 9, 1970, 1,144/70

Int. Cl. B21f 27/10

U.S. Cl. 140—112 **7 Claims**

A metallic cage for use in reinforcing concrete comprises a number of straight parallel bars and a wire helically wound around the bars and welded to the bars at the points of contact. The cage is made on an apparatus comprising a drive unit for propelling forward the parallel bars, a wiring unit for

wrapping the bars with wire, and a welding unit for welding the wire to the bars where they cross. The wiring unit suitably



comprises a circular frame surrounding the bars and carrying a spool, which is braked to keep the wire taut. The welding unit can include resistance weld guns movable with the cage.

3,706,332

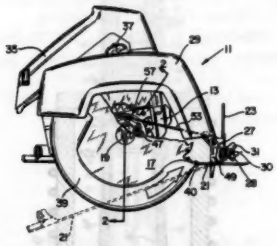
CIRCULAR SAW GUARD AND LINKAGE

William Alan George, Cockeysville, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Jan. 13, 1971, Ser. No. 106,125

Int. Cl. B27g *19/04*

U.S. Cl. 143—159 **4 Claims**



A portable electric circular saw comprising a housing having a motor supported thereon. A shaft driven by the motor has a circular saw blade fixed thereto. A shoe plate is fixed to the housing and is adapted to support the saw for movement along a workpiece. An upper guard is fixed to the housing and encompasses the cutting edge along substantially the upper half of the circular saw blade. A lower guard is pivotally supported upon the housing and normally encompasses the cutting edge along substantially the lower half of the circular saw blade. Novel means is provided whereby the lower guard is moved from its normal position, in response to positioning of the saw pursuant to cutting a workpiece, to expose that portion of the circular saw blade edge necessary to cut the workpiece.

3,706,333

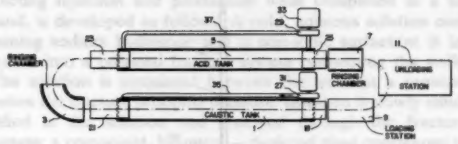
FISH SKINNING PROCESS

Gale R. Ammerman, Starkville, Miss., assignor to Mississippi State University Development Foundation, Inc., State College, Miss.

Filed May 11, 1971, Ser. No. 142,239

Int. Cl. A22c *25/17*

U.S. Cl. 146—228 **10 Claims**



Catfish are skinned by immersing in a hot caustic bath for 1–3 minutes, rinsing, neutralizing in an acid bath, e.g., acetic or citric acid, and rinsing. The fish are preferably first deheaded, eviscerated and frozen and then refrozen after deskinning.

3,706,334

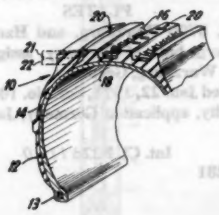
TIRE TREAD

Gilbert J. Hoke, Kenmore, N.Y., assignor to Dunlop Tire and Rubber Corporation, Buffalo, N.Y.

Division of Ser. No. 750,387, June 27, 1968, abandoned. This application Oct. 12, 1970, Ser. No. 80,139

Int. Cl. B60c *11/06*

U.S. Cl. 152—209 **4 Claims**



A pneumatic tire is provided with a tread having a traction pattern consisting of grooves and sipes. The tread pattern inhibits stone retention within the tread by suspending or cradling the stone spatially from the bottom of the groove or sipe. The grooves are provided with transverse crossbars or buttresses having a configuration and dimension relative to the groove to support or cradle a stone above the bottom of the groove.

The sipe, or traction-slit, is arranged with parallel side walls wherein a first portion extends from the tread surface radially inwardly, and a second portion is formed from segments extending from the first portion but diverted or angled to alternate sides of the mid-plane extending from the first portion. The segmented sections are provided in several forms which are either twisted, angled, turned or crimped for misalignment relative to the upper or first portion of the sipe.

3,706,335

TIRE-REMOVAL DEVICE

Robert C. Long, R.D. 1, Box 26, Smithville, Ohio

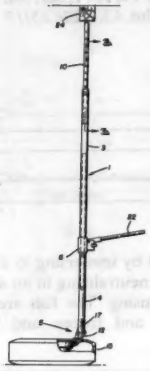
Filed March 18, 1971, Ser. No. 125,540

Int. Cl. B60c *25/06*

U.S. Cl. 157—1.17 **5 Claims**

The tire is placed flat on a floor or other substantially horizontal surface. A jack provided with a tire-removing lip is

placed on this with the lip adjacent the rim on which the tire is mounted. The top of the jack is placed under a rafter or other



horizontal structural element. By expanding the jack the lip is forced down and disengages the tire from the rim.

3,706,336

DEVICE FOR HORIZONTAL CONTINUOUS CASTING OF PLATES

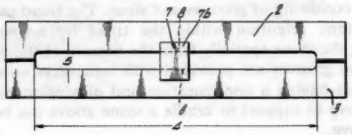
Heribert Krall, 8700 Wurzburg, and Hans Adalbert Koch, 8706 Hochberg, both of Germany, assignors to Technica-Guss GmbH, Wurzburg, Germany

Filed Jan. 22, 1971, Ser. No. 108,757

Claims priority, application Germany, Jan. 30, 1970, P 20 04 192.3

Int. Cl. B22d *11/10*

U.S. Cl. 164—281 6 Claims



A die for continuous casting of bar stock is adapted to be received in an outer cooler and made up of a lower part and an upper part having a rectangular in transverse cross section passageway therebetween which is of relatively greater width than height. To prevent the parts from coming towards each other when heated, a spacer or distance piece of refractory material is inserted therebetween at the casting material entrance end and at about the center widthwise location. This distance piece has a stem projecting into the passageway to hold the parts apart and a cap thereon abutting the adjacent entrance ends of the parts of the die to prevent the distance piece from moving on into the passageway as the casting material flows therepast.

3,706,337

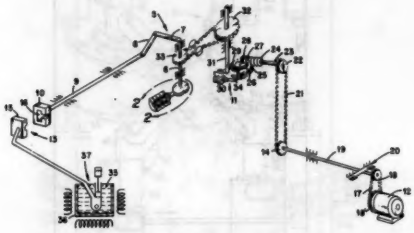
FORCE-BALANCED DIE CASTING APPARATUS

Franck M. Picker, Oak Ridge, Tenn., assignor to Pic-Air Inc., Oak Ridge, Tenn.

Division of Ser. No. 882,020, Dec. 4, 1969, Pat. No. 3,604,495. This application April 27, 1971, Ser. No. 137,879

Int. Cl. B22d *17/26*

U.S. Cl. 164—303 7 Claims



Die casting molten metal employing a split die, one platen of which is fixed and one platen of which is reciprocatable between open and closed positions, including maintaining the platen reciprocation apparatus in a force-balanced state during a major part of such reciprocation cycle.

3,706,338

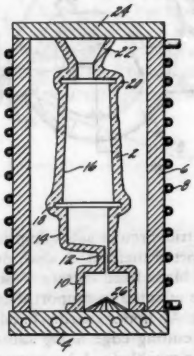
RADIATION SHIELD FOR INVESTMENT MOLDS

Robert B. Barrow, and Bruce E. Terkelsen, both of Cheshire, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Division of Ser. No. 31,637, April 24, 1970, Pat. No. 3,633,648. This application Sept. 20, 1971, Ser. No. 182,108

Int. Cl. B22d *15/00*

U.S. Cl. 164—357 3 Claims



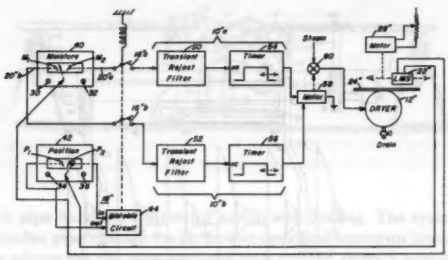
In making columnar grained or single crystal castings, the mold is heated prior to pouring and a meltable metallic shield is placed on the chill plate to serve as a heat shield between the mold and the plate during heating of the mold and also to prevent condensation of impurities on the chill plate.

3,706,339

CONTROL SYSTEM

Edward C. Bartles, and Raymond A. Fraim, both of Rochester, N.Y.

Continuation of Ser. No. 778,395, Nov. 25, 1968, Pat. No. 3,518,775. This application April 8, 1970, Ser. No. 26,606
Int. Cl. F25b *29/00*
U.S. Cl. 165—12 2 Claims



A moisture control system for use in paper making is disclosed as employing a traversing moisture sensor, the traversal time of which is made compatible with the thermal time constant of a dryer stage for such paper.

ERRATUM

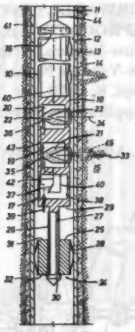
For Class 165—70 see:
Patent No. 3,706,343

3,706,340

METHODS FOR PERFORATING AN EARTH FORMATION

Nick A. Schuster, Darien, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed April 7, 1971, Ser. No. 132,014
Int. Cl. E21b *43/117*
U.S. Cl. 166—297 11 Claims



As a preferred mode for practicing the invention disclosed herein, one or more sets of selectively-fired perforating devices are positioned in a well bore and the first of two adjacent devices is actuated for producing a first perforation extending along a selected perforating axis into an adjacent earth formation. The second perforating device is then positioned immediately adjacent to the previous position of the first perforating device and directed along a second perforating axis closely paralleling that of the first perforation. Upon actuation of the second device, a second perforation is produced which is contiguous with the first perforation and effective for displacing compacted, crushed formation materials from around at least a portion of the second perforation to improve the productivity of at least this second perforation.

3,706,341

PROCESS FOR DEVELOPING INTERWELL COMMUNICATION IN A TAR SAND

David Arthur Redford, Fort Saskatchewan, Alberta, Canada, assignor to Canadian Fina Oil Limited, Alberta, Canada

Filed Oct. 8, 1970, Ser. No. 79,346
Int. Cl. E21b *43/22, 43/24*
U.S. Cl. 166—275 4 Claims

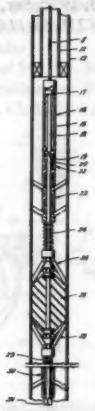
A hot, competent, permeable communications zone, connecting injection and production wells completed in a tar sand, is developed as follows: A cold, aqueous solution containing sodium hydroxide and a non-ionic surfactant is injected into a propped fracture system connecting the wells. The solution is circulated between the wells at a pressure below the fracture propping pressure. Bitumen is slowly emulsified in the solution and removed through the fracture system; a competent, bitumen — depleted zone contiguous to the fracture zone is thereby developed. The temperature of the solution is then slowly increased and the quantities of sodium hydroxide and surfactant gradually decreased until pure steam only is being circulated.

3,706,342

PACKER FOR WELLS

Brown J. Woolley, P.O. Box 1249, Kilgore, Tex.

Continuation-in-part of Ser. No. 692,203, Dec. 20, 1967, abandoned. This application Sept. 15, 1969, Ser. No. 858,010
Int. Cl. E21b *23/06, 33/128, 33/129*
U.S. Cl. 166—134 22 Claims



A well tool for controlling fluid flow through a well bore. It has particular application in the form of a packer or bridge plug for insertion down through a restriction such as tubing, collapsed casing or the like in a well and is adapted for expansion to a size sufficient to engage the casing at a point spaced below the restriction.

3,706,343

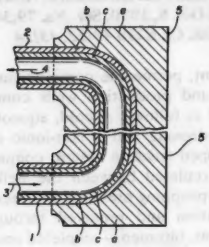
STAVE COOLING DEVICE EMPLOYING DOUBLE-TUBES

Yoshinori Saiga, Funabashi, and Kazunori Mohri, Yokahama, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed June 4, 1971, Ser. No. 150,216
Claims priority, application Japan, June 4, 1970, 45/54403
Int. Cl. F28f *7/02*; C21b *7/10*
U.S. Cl. 165—70 1 Claim

A stave cooling device wherein a double-drawn-steel-tube is

cast into a main-body of castable metal, the outer surface of the outer tube of said double-tube being closely welded to said



main body and the inner tube of said double-tube serving as the passage of the coolant.

3,706,344

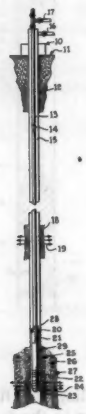
TUBING CONVEYED PERMANENT COMPLETION METHOD AND DEVICE

Roy R. Vann, 3302 Providence Drive, Midland, Tex.

Filed Oct. 15, 1970, Ser. No. 80,991

Int. Cl. E21b *43/116, 43/12*

U.S. Cl. 166—297 **26 Claims**



Method and apparatus for effecting a dual completed well wherein the lower zone is packed off or isolated from the upper zone prior to perforating either zone; the upper zone is then completed, whereafter the lower zone is perforated. In perforating the lower zone a casing perforating gun, gun firing mechanism, and packer are run into the hole with the gun being suspended below the packer and properly positioned with respect to the borehole. The lower zone is then isolated and the tubing to the packer is removed. The upper zone is then completed, tested, and shut-in, if desired. The tubing is again flow connected to the packer, swabbed clean, and then the casing perforator is actuated, with the production from the lower zone being free to flow to the surface of the earth at the moment the lower perforations are made by the gun. The packer, gun and the firing mechanism are left in the hole.

3,706,345

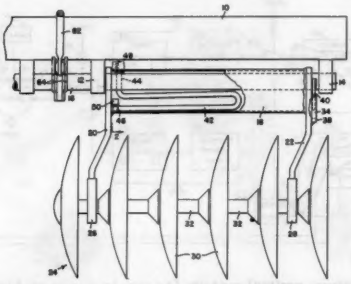
TOOL MOUNTING MEANS FOR AGRICULTURAL IMPLEMENTS

Roger Lee Patterson, Fonthill, and Henning Isachsen, Merritton, Ontario, both of Canada, assignors to Deere & Company, Moline, Ill.

Filed July 22, 1970, Ser. No. 57,115

Int. Cl. A01b *35/28, 39/20*

U.S. Cl. 172—572 **16 Claims**



An apparatus for resiliently mounting an elongated gang of disks on the frame of an agricultural implement, including an elongated tubular member having a pair of arms fixed to its ends and extending outwardly therefrom, the gang of disks being supported on the outer ends of the arms; a shaft rotatably mounted on the frame and extending axially through the tubular member; a U-shaped torsion bar contained within the tubular member and acting between the tubular member and shaft for biasing the former, and thereby the gang of disks, downwardly about the latter; and a pair of upper and lower stops defining the range of movement of the tubular member about the shaft. A hydraulic ram is operable to rotate the shaft and thereby raise and lower the gang of disks relative to the frame.

3,706,346

MOVEMENT ABSORBING LOWER LINKS HITCH FRAME PIVOTALLY CONNECTED ABOUT AN UPWARDLY FORWARDLY INCLINED AXIS TO A RECIPROCATING HARROW

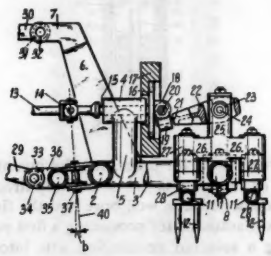
Herbert Vissers, Nieuw-Vennep, Netherlands, assignor to H. Vissers N.V., Nieuw-Vennep, Netherlands

Filed Sept. 8, 1970, Ser. No. 70,054

Claims priority, application Netherlands, Sept. 17, 1969, 69/14073

Int. Cl. A01b *35/10, 59/06, 61/02*

U.S. Cl. 172—102 **8 Claims**



An agricultural implement is provided comprising a frame, to be connected to a tractor and a reciprocating tool cultivating the soil.

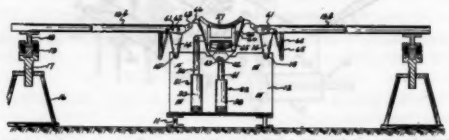
For preventing the reciprocating tool to force the tractor to make an oscillatory movement the tractor is connected to the frame of the implement through an auxiliary frame which is connected swingably to the frame for a swinging movement around an axis inclining forwardly.

3,706,347

PIPE HANDLING SYSTEM FOR USE IN WELL DRILLING

Cicero C. Brown, c/o Brown Oil Tools, Inc., P. O. Box 19236, Houston, Tex.

Filed March 18, 1971, Ser. No. 125,740
Int. Cl. E21b *19/14*
U.S. Cl. 175—85 16 Claims



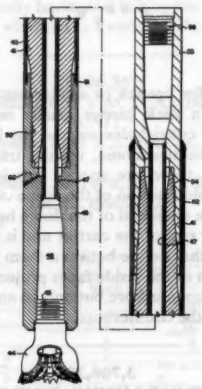
A pipe handling system for use in well drilling. The system includes pipe storage racks, power-operated conveyor means for advancing the pipe sections to a drilling derrick and for transferring the pipe sections from the storage racks to the conveyor means; power swivel means supported by the derrick hoist adapted for connection to the pipe sections, and power-actuated pivoting means connecting the power swivel means to the hoist to enable angular movement of the swivel means as required to effect alignment thereof with the forward ends of the pipe sections entering the derrick from the conveyor means.

3,706,348

WELL DEVIATION CONTROL SYSTEM

Carey E. Murphey, Jr., Zurich, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 2,763, Jan. 14, 1970, abandoned. This application Dec. 6, 1971, Ser. No. 205,222
Int. Cl. E21b *17/00*
U.S. Cl. 175—320 7 Claims



A system for controlling hole deviation through the use of a bit and a composite drill string comprising a heavy drill collar disposed above the bit and conventional steel collars above the heavy metal collar.

ERRATUM

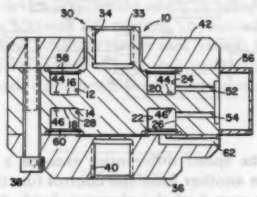
For Class 177—1 see:
Patent No. 3,706,587

3,706,349

LOAD CELL

Owen Paelian; Donald R. Rister, and Richard L. Kellar, all of Huntsville, Ala., assignors to Toroid Corporation, Huntsville, Ala.

Filed Oct. 2, 1970, Ser. No. 77,634
Int. Cl. G01g *3/14*
U.S. Cl. 177—211 11 Claims



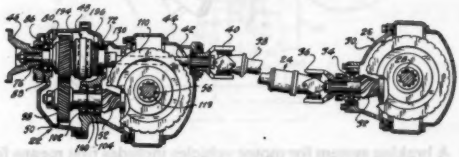
A load cell consisting basically of three structural regions concentrically arranged, a central or hub region adapted to receive loading from a first direction, an outer tubular region adapted to receive opposite and equal loading and a web or diaphragm region interconnecting the central and outer regions, and wherein strain gauges are placed on the surface of the web region and respond to bending strain produced in the web region by load so applied.

3,706,350

FULLY AUTOMATIC LOCKING INTERAXLE DIFFERENTIAL FOR TANDEM VEHICLES

Ronald D. Bokovoy, Detroit, Mich., assignor to Boise Cascade Corporation, Boise, Idaho

Continuation-in-part of Ser. No. 30,851, April 22, 1970, abandoned. This application Dec. 9, 1970, Ser. No. 96,569
Int. Cl. B62d *61/04*
U.S. Cl. 180—24.09 8 Claims



An interaxle differential mechanism adapted to deliver torque from a driving shaft to the rear axles and the rear-rear axles of a tandem drive vehicle wherein provision is made for distributing the torque to the rear-rear axles and the rear axles without incurring individual rear-rear axle spin-out or forward-rear axle spin-out, and wherein provision is made also for automatically disconnecting from the driveline either the rear axles or the rear-rear axles when a tendency exists for one or both rear axles or one or both rear-rear axles to overrun due to turning maneuvers.

3,706,351

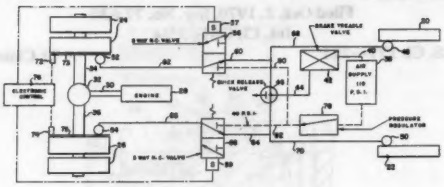
DIFFERENTIAL CONTROL

James C. Neisch, Orchard Lake, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 807,060, March 13, 1969, abandoned. This application Jan. 25, 1971, Ser. No. 109,538
Int. Cl. B60k *23/04*
U.S. Cl. 180—75 14 Claims

An electromechanical system for limiting the speed differential between a pair of vehicle axle shafts driven through the differential unit. The system effectively compares the axle

shaft speeds and, upon detection of a predetermined speed difference, controls the brakes to thereby reduce or eliminate the speed differential. In one form the control function is exercised when the speed differential exceeds a predetermined fixed value. In another form the control function is exercised whenever the speed of the slower axle shaft is less than a predetermined percent of the speed of the faster axle shaft.



3,706,352

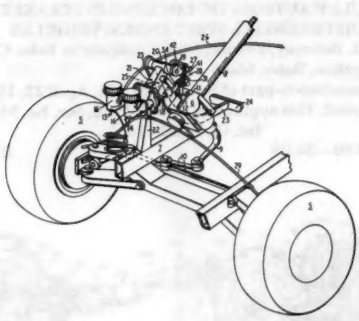
AUTOMATIC BRAKE-SAFETY CONTROL

Colin Campbell Ferguson, 8 Russell Street, and William Robert Fossey Bolton, 1 Cox Street, P.O. Box 279, both of Toowoomba, Queensland 4350, Australia

Filed Jan. 20, 1971, Ser. No. 107,890

Int. Cl. B60k *33/02*

U.S. Cl. 180—103 **2 Claims**



A braking system for motor vehicles includes first means for applying substantially the same braking effect to the front and rear wheels at substantially the same time when the vehicle is moving in a straight line and second means for reducing the braking effect on the front wheels compared with that on the rear wheels when the front wheels are turned, the reduction being approximately in proportion to the degree of turn of the front wheels.

3,706,353

NOISE SUPPRESSOR FOR JET ENGINES

John Eirwyn Ffowcs-Williams, Surrey; Roy Hawkins, Bristol; Hylton Dawson, Bristol, and William Smith, Bristol, all of England, assignors to Secretary of State for Defense in Her Brittanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

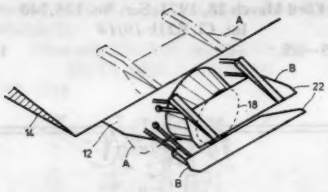
Filed Nov. 23, 1971, Ser. No. 201,511

Claims priority, application Great Britain, Nov. 30, 1970, 56,887/70; Dec. 19, 1970, 60,404/70

Int. Cl. F01n *1/14, 1/16;* **B64d** *33/06*

U.S. Cl. 181—33 HC **3 Claims**

The disclosure of this invention pertains to noise suppression apparatus for jet engines wherein two convergent but otherwise relatively flat plates are arranged in a position downstream of the exhaust nozzle of an engine and at opposite sides of the nozzle axis so that a generally axisymmetric jet is flattened when passing through between the plates and is thereby caused to spread in a direction transverse to said axis with consequent noise suppression in said direction.



3,706,354

CASE FOR LIPSTICKS AND OTHER PASTY PRODUCTS

Ralph Gruska, Val-de-Marne, France, assignor to SEBEC Societe d'Exploitation de Brevets d'Emballage Cosmetique SA, Fribourg, Switzerland

Filed April 7, 1970, Ser. No. 26,226

Claims priority, application France, April 11, 1969, 6911210

Int. Cl. A45d *40/02*

U.S. Cl. 401—78 **10 Claims**

In a container for lipstick or similar materials of the usual kind comprising a stick carrier axially movable within the inner one of two coaxial sleeves and the lipstick being provided with a protective dome, usually transparent, that fits onto the carrier, there are special provisions for ensuring smooth and reliable ejection of the dome on first operation of the container. The open end of the dome has a counterbore to fit over the upper end of the carrier and is also provided with longitudinal slits that define between them flexible tongues of which at least part of the inside faces project inwards from the remainder of the counterbore but only to an extent not greater than the depth of the counterbore.

3,706,355

RESERVOIR FOR LUBRICATING PNEUMATIC COMPONENTS

Edgar C. Oglesbee, 1819 Harvard Boulevard, Dayton, Ohio

Division of Ser. No. 836,408, June 25, 1969, Pat. No. 3,595,341.

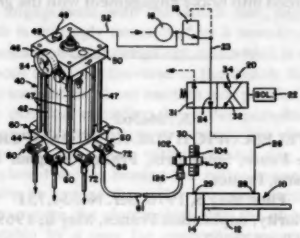
This application June 21, 1971, Ser. No. 155,106

Int. Cl. F16n *7/32*

U.S. Cl. 184—7 R **1 Claim**

The reservoir includes an inlet for admitting lubricating fluid and at least one outlet adapted to be connected to a lubricating device used to supply fluid to at least one pneumatic component. The same pressurized air which drives the pneumatic component at a driving pressure is connected to the reservoir, and the reservoir includes an air pressure regula-

tor for reducing the pressure of the pressurized air to a pressure less than the driving pressure enabling the reservoir to be



positionable remote from the component and at the same time to deliver fluid to the lubricating device at a pressure less than the driving pressure.

3,706,356

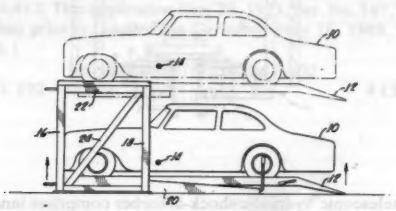
VEHICLE HOIST

Lewis R. Herbst, 1036 Liberty Lane, Anaheim, Calif.; Burton C. Herbst, 221 Martha Place, Fullerton, Calif., and Wayne K. Herbst, 5082 Siesta Lane, Yorba Linda, Calif.

Filed April 22, 1970, Ser. No. 30,672

Int. Cl. B60s *13/00*

U.S. Cl. 187—8.59 **1 Claim**



A vehicle hoist for vertically reciprocating vehicles while supporting the vehicle in cantilever fashion. The vehicle is maintained essentially horizontal during the reciprocation and may be selectively elevated to a variety of heights.

3,706,357

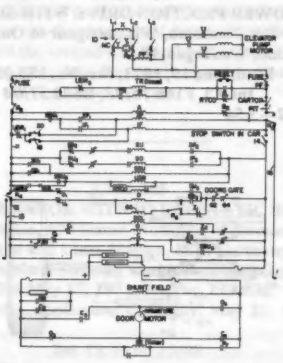
ELEVATOR EMERGENCY ACTUATOR AND RESCUE UNIT

Joseph Elmer Simpson, 1407 N.E. 60th St., Fort Lauderdale, Fla.

Filed March 30, 1970, Ser. No. 23,925

Int. Cl. B66b *5/02*

U.S. Cl. 187—29 R **6 Claims**



An auxiliary power unit is mounted in the power room and is connected to the operating system in such a way as to take over the operation of the elevator automatically in case of (a) loss of power to the elevator at the elevator disconnect switch, (b) loss of one or more phases of a three-phase power supply, (c) reversal of a phase, (d) if a call has not been answered within a predetermined time. When an auxiliary power unit goes into action it does a number of things including moving the car to the nearest floor level and opening the car and hoistway doors for passenger exit. The auxiliary power unit does not go into action if the safety circuit is open.

A solid state device is provided which (a) converts a 12-volt DC current to a 220-volt AC current, (b) automatically starts the recharge of the auxiliary power unit battery upon resumption of the regular power supply, (c) maintains the battery fully charged, and (d) prevents over-charging of the battery.

3,706,358

Patent Not Issued For This Number

3,706,359

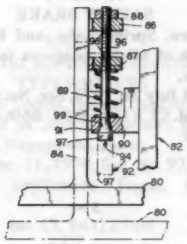
ENERGY ABSORBING STRUCTURES

Edward P. Skralskis, Lake Oswego, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Filed Sept. 25, 1970, Ser. No. 75,426

Int. Cl. F16f *7/12*

U.S. Cl. 188—1 C **5 Claims**



An automobile frame includes telescoping front and rear sections normally extended by energy absorbing devices each including pairs of drawable rods secured together by turnbuckle nuts and engaging pairs of drawing dies in bars fixed to the sections. Energy absorbing devices include ears on bumpers and frames held together by drawable or extrudable rods with long threaded shanks on the rods to permit takeup after partial drawing or extruding.

3,706,360

AUTOMATIC BRAKE ADJUSTER

Mizuo Nyunoya, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi pref., Japan

Filed Dec. 28, 1970, Ser. No. 101,666

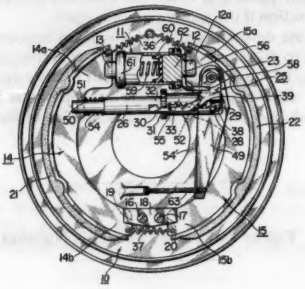
Claims priority, application Japan, Dec. 25, 1969, 45/306

Int. Cl. F16d *51/50*

U.S. Cl. 188—79.5 P **10 Claims**

This invention relates generally to improvements in and relating to a hydraulic brake control apparatus in an automo-

tive vehicle. More specifically, it relates to an apparatus for automatic brake gap control in a shoe-drum brake unit for an automotive hydraulic brake system comprising a hydraulic service brake system and a manual parking brake system.



The improvements resides in the provision of such means that during actuation of the hydraulically operated service brake, a ratchet type brake gap-adjuster is disabled from operation, and during actuation of the manually operated parking brake, the adjuster is released to its ready-for-operational position.

3,706,361

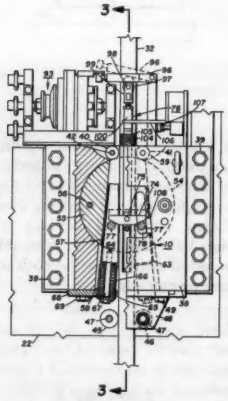
SAFETY BRAKE

Walter A. Paulssen, Spring Lake, and Robert R. Johnston, Muskegon, both of Mich., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed July 21, 1970, Ser. No. 56,793

Int. Cl. F16d *59/00*; B60t *8/12*

U.S. Cl. 188—189 **17 Claims**



A safety brake operable in the event of a support failure between contiguous load carrying component parts of elevating equipment such as the mast of a stacker crane in which the parts are normally supported one dependent on the other. Tapered brake shoes secured spaced apart on one of the component parts are normally held disengaged from a gripping bar vertically extending therebetween and secured to the other component part. In the event of failure in the normally connecting support structure, brake operation is triggered by an associated velocity-sensitive actuator enabling the shoes to be wedgedly forced into brake engagement with the gripping bar.

3,706,362

TELESCOPIC HYDRAULIC DAMPER

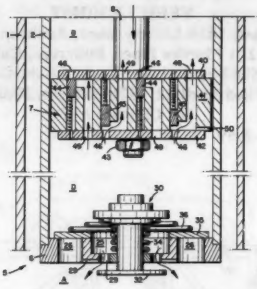
Denis Marie Faure, Saint Prix, France, assignor to Chrysler France, Paris, France

Filed May 5, 1970, Ser. No. 34,731

Claims priority, application France, May 8, 1969, 6914868; Sept. 26, 1969, 6933007

Int. Cl. F16f *9/34*

U.S. Cl. 188—282 **3 Claims**



A telescopic hydraulic shock-absorber comprises inner and outer cylinders provided at their head and foot ends with respective closure members formed with conical bearing surfaces for self-centering of said cylinders. The annular head closure member of the inner cylinder guides the rod of a piston through which are arranged, for each direction of motion, two valves opening at different pressures. The annular foot closure member of the inner cylinder carries coaxially arranged valve means, controlling selectively the flow of make-up liquid to and from said outer cylinder.

3,706,363

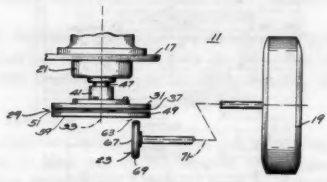
LAWN MOWER FRICTION DRIVE WITH SLIP CLUTCH

Donald E. Niles, Nashotah, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed June 15, 1971, Ser. No. 153,356

Int. Cl. F16h *15/08*; B62d *51/04*

U.S. Cl. 192—3.54 **7 Claims**



Disclosed herein is a lawn mower including a friction drive comprising a clutch disc connected to a driving engine, a

clutch plate mounted in facing relation to the clutch disc and for clutch plate rotation co-axially with and independently of the clutch disc, as well as for axial movement relative to a position in engagement with the clutch disc, together with a roller which is drivingly connected to a mower drive wheel, which includes a circular periphery, and which is mounted for rotation about an axis transverse to the clutch disc and plate axis and for translation about another axis parallel to the roller axis into a position engaging the roller periphery with the clutch plate in such manner as to more or less also simultaneously engage the clutch plate with the clutch disc. In addition, there is disclosed means biasing the roller toward the clutch disc, whereby to engage the roller periphery with the clutch plate and to engage the clutch plate with the clutch disc, and means operable by a user for controlling movement of the roller relative to the position engaging the roller periphery with the clutch plate.

3,706,364

FORM-LOCKING CONNECTION OF TORQUE-TRANSMITTING STRUCTURAL PARTS, ESPECIALLY IN AUTOMATIC MOTOR VEHICLE TRANSMISSIONS

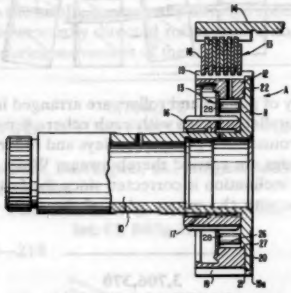
Josef Helmer, Aich Kreas Nurtingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Division of Ser. No. 825,272, May 16, 1969, Pat. No. 3,606,412. This application May 28, 1971, Ser. No. 147,775

Claims priority, application Germany, May 16, 1968, P 17 50 586.1

Int. Cl. F16d *41/04*; B23p *11/00*

U.S. Cl. 192—48.92 **4 Claims**



A form-locking connection between a first structural part provided with external teeth and a second structural part; the external teeth of the first structural part are extended beyond its end face, and the second structural part is provided with external teeth engaging into the overhanging portion of the external teeth of the first structural part.

3,706,365

CLUTCH OPERATOR WITH HYDROSTATIC BEARINGS

Heinz-Dieter Bohm, 475 Unna; Wolfgang Muller, and Herbert Hobert, both of 475 Unna-Massen, all of Germany, assignors to Maschinenfabrik Stromag G.m.b.H., Unna, Germany

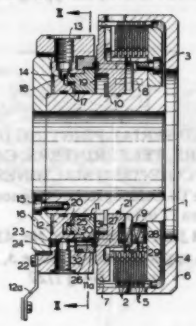
Filed May 17, 1971, Ser. No. 122,330

Claims priority, application Germany, May 21, 1970, P 20 24 639.3

Int. Cl. F16d *25/08*

U.S. Cl. 192—85 CA **11 Claims**

A coupling having a pair of coupling members and axially movable means for selectively establishing a torque-transmitting relation between said pair of coupling members and for disconnecting said pair of coupling members so that the driving coupling member does not any longer drive the driven coupling member. The aforementioned axially movable means are operated by a fluid motor. A hydrostatic bearing is interposed between the aforementioned axially movable means and the fluid motor. The coupling is provided with additional hydrostatic bearings for receiving and balancing axial forces and for receiving and balancing radial forces inherent in the operation of the coupling.



3,706,366

REPEAT TYPING MECHANISM FOR POWER OPERATED TYPEWRITERS

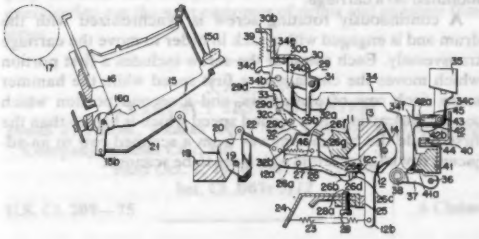
Yukio Hishida; Nakai Toshio, both of Nagoya, and Susumu Kuzuya, Gifu-ken, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya-shi, Japan

Filed Dec. 11, 1970, Ser. No. 97,076

Claims priority, application Japan, Dec. 16, 1969, 44/119848

Int. Cl. B41j *23/08*

U.S. Cl. 197—17 **4 Claims**



A repeat typing mechanism for power operated typewriters comprising a snatch roll, pawl members detachably engaged therewith, actuating members rockable about a fixed shaft so as to hold said pawl members in a rockable state, key levers, and control levers actuated by said levers and provided with first and second bent lugs disposed substantially at right angles to each other, wherein the key lever can be successively

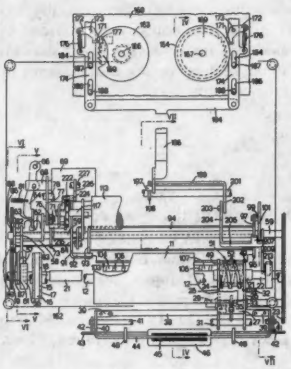
depressed in two steps, and at the time of the first step depression of the key lever by the first bent lug and at the time of the second step depression thereof by cooperation of the first and second bent lugs, the upwardly extending engaging arm of the pawl member is directly actuated to cause the pawl member to be engaged with or disengaged from the snatch roll with the resulting operation of the actuating member, said first step depression leading to a non-repeat typing action and said second step depression to a repeat typing action.

3,706,367

HIGH SPEED SERIAL PRINTING DEVICE FOR TYPEWRITERS, TELEPRINTERS, CALCULATING MACHINES, ACCOUNTING MACHINES AND THE LIKE

Franco Bretti, Are'Di Caluso, Italy, assignor to Ing. C. Olivetti & C.S.p.A., Ivrea (Turin), Italy

Filed June 2, 1970, Ser. No. 42,700
Claims priority, application Italy, June 3, 1969, 52093 A/69
Int. Cl. B41j 1/22
U.S. Cl. 197—55 **5 Claims**



A high speed serial printing device comprises a continuously rotating drum circumferentially carrying a plurality of rows of characters which are to be struck by a hammer mounted on a carriage.

A continuously rotating screw is synchronized with the drum and is engaged with a rack in order to move the carriage transversely. Each spiral of the screw includes a first portion which moves the carriage at a first speed while the hammer scans each row of characters, and a second portion which moves the carriage at a second speed which is higher than the first, while the hammer moves from a scanned row to an adjacent row of characters which are to be scanned.

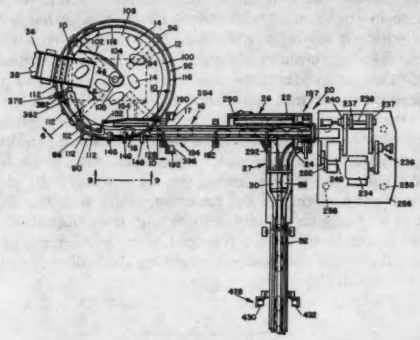
3,706,368

CLOSURE HANDLING AND ORIENTING APPARATUS

Walter S. Sterling, Quincy, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Filed Nov. 30, 1970, Ser. No. 93,554
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AA **17 Claims**

Apparatus particularly adapted for handling oblong closures having printing thereon wherein the closures are first aligned end to end in a row regardless of whether or not the printing on adjacent closures reads in the same direction, and



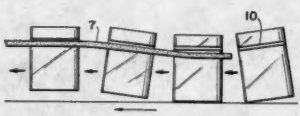
thereafter the closures are oriented and realigned with the printing on all of the closures oriented to read in the same direction.

3,706,369

INCLINATION CORRECTING DEVICE FOR BAGS CARRYING FASTENERS

Hiroshi Ishida, and Minoru Mukai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 830,030, June 3, 1969, abandoned. This application May 13, 1971, Ser. No. 143,181
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AD **1 Claim**



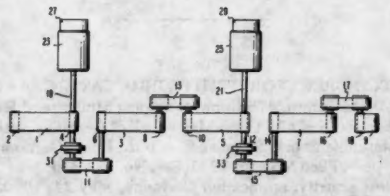
A plurality of pulleys and rollers are arranged in two groups in spaced parallel relation with each other. A moving belt is tensioned around each group of pulleys and rollers respectively and the bags are carried therebetween. While the bags are moving, the inclination is corrected since the fastener of each bag engages with the upper edge of the belts and is hung thereby.

3,706,370

CONVEYOR SYSTEM

Edward J. Bonafino, Endwell; Frederick W. Doolittle, Binghamton; Charles U. Hayes, and James C. Yarrington, both of Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,056
Int. Cl. B65g 23/26, 23/36
U.S. Cl. 198—76 **7 Claims**

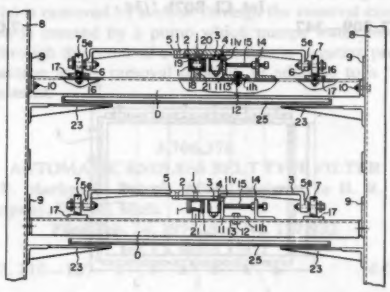


A conveyor system comprising a plurality of tandem conveyor sections, each having an associated driver or power means, adjacent sections being coupled to each other by overrunning clutches, so that downstream sections can operate as fast or faster than upstream sections.

3,706,371
A FRICTION REDUCED CONVEYING APPARATUS OF HELICAL CHAIN CONVEYOR TYPE

Itaru Hirota, 8-15, Nakamachi, 3-chome, Hoya-shi, Tokyo-to, Japan

Filed Dec. 16, 1970, Ser. No. 98,583
Int. Cl. B65g *17/00*
U.S. Cl. 198—181 **5 Claims**

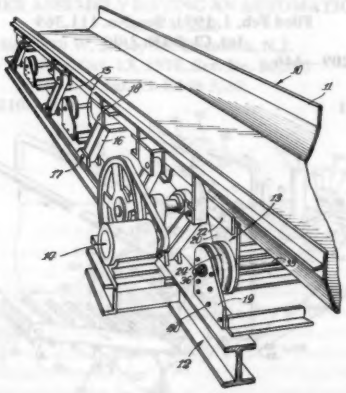


In an apparatus for conveying a product along a helical path, and well suited for the product to be dough, there is provided in combination, a chain and carrier plate means for being moved with the chain, a downward pin connected with the carrier plate means and having an axis disposed laterally of the chain outside the chain from an external side of the chain and the downwardly directed pin carrying an axially downwardly directed roller spaced laterally of the chain outside the chain from the aforementioned external side of the chain, and a support having thereon a facially laterally helical guide rail interposed between the axially downwardly directed roller and the axis of the helical path and laterally facially in contact with the axially downwardly directed roller for guiding the axially downwardly directed roller around the axis of the helical path during movement of the chain.

3,706,372
SUPPORT STRUCTURE FOR USE WITH VIBRATORY DEVICES

Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation

Filed Jan. 4, 1971, Ser. No. 103,383
Int. Cl. B65g *25/04*
U.S. Cl. 198—218 **9 Claims**

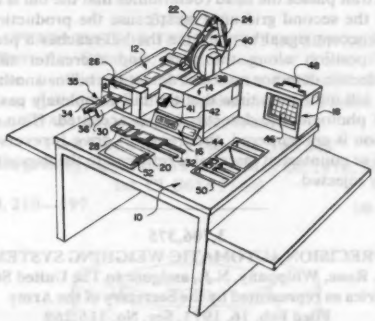


A vibratory device such as for use in conveying pulverulent materials and the like. The device includes a material-carrying member which is reciprocated by a suitable drive. The material-carrying member is carried on resilient supports to support the member substantially solely by resistance thereof to shear.

3,706,373
METHOD AND APPARATUS FOR CORRELATING REJECTED PHOTOGRAPHIC PRINTS WITH CORRESPONDING PHOTOGRAPHIC NEGATIVES

Gerald C. Smith, Honeoye, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed April 16, 1971, Ser. No. 134,791
Int. Cl. B07c *5/10*
U.S. Cl. 209—73 **16 Claims**



Method and apparatus for sorting "marked" unacceptable prints from acceptable prints as the prints are cut from a print roll, cutting customer order negative filmstrips into a plurality of negative filmstrips, stacking the filmstrips in a predetermined manner, and correlating the "marked" prints with the cut and stacked negative filmstrips containing the corresponding negative that, when printed, produced the unacceptable print. The above apparatus and method is embodied in a disclosed finishing operations workcenter that also includes apparatus for counting the total number of prints made from a customer order negative filmstrip and for displaying the price to be charged therefor. The operator of the finishing operations workcenter gathers the acceptable prints, inserts them into an envelope obtained from an envelope dispenser, removes the stacked negative filmstrips from the prints cutting apparatus, inserts the negative filmstrips into the envelope, notes the price displayed by the automatic print counting and price display apparatus and marks the envelope with the indicated price. When marked prints have been detected, the operator separates the marked prints and corresponding negative filmstrips, inserts the good prints and negative filmstrips into the envelope and attaches the marked prints and corresponding negative filmstrips to the envelope. These orders are set aside for reprinting. Upon the removal of the stack of negative filmstrips from the automatic film cutting and stacking apparatus, the print counter and the correlator display are reset and the print and film cutting apparatus are energized to cut the next customer of prints and negative filmstrips.

3,706,374
CURRENCY TESTING SYSTEM

James F. Ptacek, Kansas City, Mo., assignor to The Vendo Company, Kansas City, Mo.

Filed Oct. 9, 1970, Ser. No. 79,444
Int. Cl. B07c *3/12*
U.S. Cl. 209—75 **6 Claims**

In a currency acceptor, a transport having a reversible drive conveys a bill to be tested along a path of travel past a first

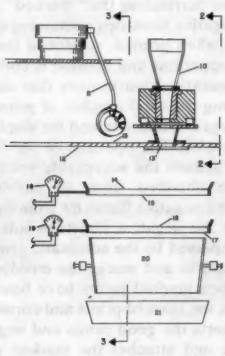
photoelectric detector, a transducer head at a test station for sensing the physical properties of the bill, and then a second photoelectric detector. If the grid areas on opposite sides of the portrait on the bill have physical properties indicative of validity, testing circuitry responsive to the head produces an accept signal as each grid area passes the head. To be deemed valid, the first grid area must cause the production of an accept signal, the leading and trailing edges of the bill must be concurrently detected by the two photoelectric detectors as the portrait passes the head (determines that the bill is not too short), the second grid area must cause the production of a second accept signal by the time the bill reaches a predetermined position along the path, and thereafter the first photoelectric detector must not detect the bill or another, following bill until such time that the bill completely passes the second photoelectric detector and is accepted. If an invalid condition is encountered, the transport drive is reversed and the bill or counterfeit material is returned to the depositor and thereby rejected.

3,706,375

PRECISION AUTOMATIC WEIGHING SYSTEM

Emil J. Raue, Whippany, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Feb. 16, 1971, Ser. No. 115,268
Int. Cl. B07b *13/08*
U.S. Cl. 209—121 **6 Claims**



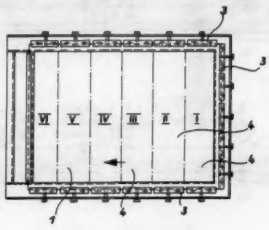
Two complimentary feeds are provided, the first from an alternate shuttle hopper feed employing a pair of volumetric metering cups provides a weight slightly less than the desired metered weight. The difference between the required metered weight and the short weight is scaled, determined and converted into an electrical analog signal. The second feed consists essentially of a hollow cylinder provided with a plurality of outwardly directed apertures asymmetrically arranged in longitudinal rows. Within the cylinder there is disposed a closed elastomeric tube, which when filled with air at low pressure will bear against the inner surface of the cylinder for ejection of material in said apertures. The feed cylinder is supported for rotation and coupled to an electrically controlled drive for selectable angular displacement thereof. Also included in a sensor for indicating electrically the angular position of the cylinder and whose output, with the analog short weight signal, are applied to an electronic control device which thereupon provides an output signal to said controlled drive to displace the cylinder a sufficient amount to dispense material, previously deposited in said recesses, to accurately compensate for the short weight. A vibratory feed supply is associated with the cylinder so as to provide a pellet for each aperture as it passes the feed point and a receptacle for receiving the pellets as they are gravity ejected.

3,706,376

SCREEN WITH DIFFERENTLY TENSIONED SURFACE ZONES

Rudolf J. Krause, Bad Homburg, Germany, assignor to Rhewum Rheinische Werkzeug-und Machinen fabrik G.m.b.H., RemscheidyLuttringhausen, Germany

Filed June 15, 1970, Ser. No. 46,197
Claims priority, application Germany, June 13, 1969, G 69 23 765.6
Int. Cl. B07b *1/34*
U.S. Cl. 209—347 **7 Claims**



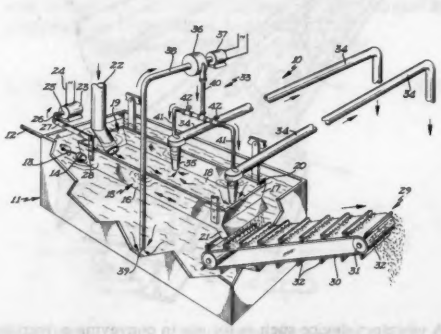
A sifting machine has a strainer box defining feed-in and discharge points and a free sieve netting surface arranged and tensioned in the strainer box so that a material flow-path is defined across it from the feed-in point to the discharge point. A plurality of striker assemblies may also be arranged in the strainer box for exciting the netting surface. A plurality of fastening and tensioning devices such as clamps are provided along the edges of the netting which are parallel to the direction of the material flow-path for individually tensioning the netting, in a direction transverse to the flow-path, at different points spaced in the direction of the flow-path such that the netting is transversely tensioned to different tensions along the direction of the flow-path. Similar devices may be provided along at least one edge of the netting parallel to the material flow-path for individually tensioning the netting, in the direction of the flow-path, at different points spaced transversely to the direction of the flow-path. The striker assemblies may be operated synchronously or asynchronously.

3,706,377

PUMP OPERATED REMOVAL DEVICE FOR CLEANING APPARATUS

Steve R. Blanich, 1001 Birch Street, P.O. Box 96, Crosby, Minn.

Filed Feb. 1, 1971, Ser. No. 111,369
Int. Cl. B03b *3/00*
U.S. Cl. 209—446 **5 Claims**



A gravel or ore cleaning apparatus comprises a tank which contains water maintained at a predetermined level. A pan is positioned within the tank below the water level and receives

material to be cleaned therein. The pan is oscillated by an oscillating mechanism to cause the material to be moved to the egress end of the pan and to cause the material to be stratified in a lower layer of sound heavy material and an upper layer of unsound lightweight material. A conveyor removes the sound heavy material from the tank as it is discharged from the egress end of the pan. A pair of removal conduits have their intake ends positioned over the material in the pan so that the water entrained unsound lightweight material is removed by suction through the removal conduits. Suction is created by a pump which pumps water from the tank through the removal conduit to create negative pressure and suction in the removal conduit, in addition to a "true" siphon assist.

3,706,378

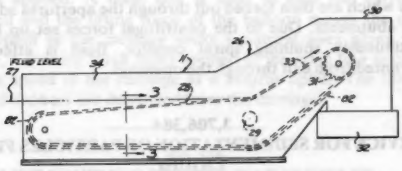
AUTOMATIC ENDLESS BELT TYPE FILTER

John P. Markwick, Detroit, Mich., assignor to H. R. Black Company, Detroit, Mich.

Filed Feb. 24, 1971, Ser. No. 117,932

Int. Cl. B01d *33/32*

U.S. Cl. 210—107 **4 Claims**



The filter of the present invention is of the automatic endless belt type and is contained in a housing; the filter housing is disposed in a tank filled with clean fluid and the filter housing has an inlet for dirty fluid and an outlet for clean fluid communicating with the fluid in the tank; an electromechanical automatic control system is provided to rotate the filter assemblies in predetermined increments in response to the degree of contamination along certain areas of the filter media. The filter media is supported on a screen adapted for travel in the fashion of an endless belt and improved sealing means are provided which cooperate with means along the guide supports of the endless filter belt along both outer margins thereof.

3,706,379

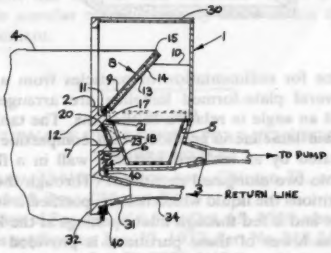
SKIMMER ASSEMBLY HAVING AN AUTOMATIC SHUT-OFF WEIR

Giora Erlich, 220 W. Jersey St., Elizabeth, N.J.

Filed Oct. 13, 1970, Ser. No. 80,395

Int. Cl. E04h *3/20*

U.S. Cl. 210—169 **16 Claims**



A skimmer assembly adapted to be connected to a water circulation system to remove floating debris from the surface of a swimming pool or other body of liquid is provided with a floatable shut-off weir pivotally mounted in the inlet passage of a skimmer tank. The weir is responsive to the water level in the skimmer tank and serves the dual purpose of maintaining a constant water level in the tank when the water level in the pool is normal, and automatically seating against an appropriate seat to close the tank to prevent air inclusion into the water circulation system when the pool level drops below a predetermined point.

3,706,380

APPARATUS FOR TREATMENT OF SEWAGE

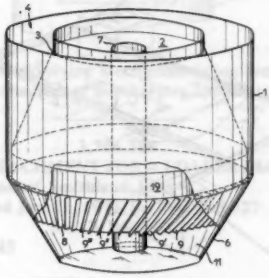
Jean Pierre Le Quinquis, Sainte Luce sur Loire, France, assignor to Compagnie d'Etudes et de Recherches des Services operationnels d'Assainissement en France Compaigne, SOAF, Boulogne, S/Seine, France

Filed May 20, 1971, Ser. No. 145,346

Claims priority, application France, May 20, 1970, 7018243

Int. Cl. B01d *21/00*

U.S. Cl. 210—197 **10 Claims**



An installation for the treatment of sewage comprises a tank having an inner wall dividing the tank into a central digestion zone and peripheral zones of decantation and removal of treated effluents, the lower portion of the tank being in the form of a reversed truncated cone and having a series of small upwardly directed conduits connecting the bottom of the tank with the upper zone of decantation.

3,706,381

CHROMATOGRAPHIC APPARATUS

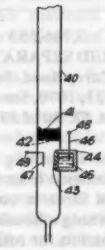
Peter Leonard Joynes, and Robert James Maggs, both of Cambridge, England, assignors to Pye Limited, Cambridge, England

Filed April 22, 1971, Ser. No. 136,494

Claims priority, application Great Britain, May 19, 1970, 24,287/70

Int. Cl. B01d *15/08*

U.S. Cl. 210—198 C **19 Claims**



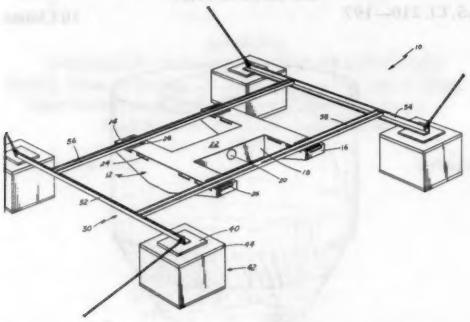
For liquid chromatographic apparatus where the solute in the eluant exhibits electrochemical properties and the mobile phase is an electrolyte, a detector comprises a first electrode

formed of a solid suspension of carbon in an electrically insulating material and a second electrode. An electric potential which may be a d.c. potential but preferably is an alternating potential with a d.c. bias is applied between the electrodes and the resultant current is measured. The first electrode is conveniently a carbon impregnated silicone rubber membrane but other constructions are described.

3,706,382
OIL REMOVAL DEVICE

Ralph Herbert Cross, III, Lexington, Mass., assignor to David Parks Hoult, Wellesley; Ralph H. Cross, III, Lexington and Jerome H. Milgram, Cambridge, Mass.

Filed March 12, 1971, Ser. No. 123,567
Int. Cl. C02b *9/02*
U.S. Cl. 210—242 **5 Claims**



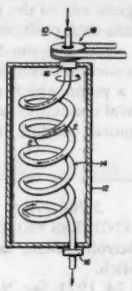
A buoyant oil-removal device for use with a floating oil-confining barrier on a water surface with oil slicks of substantial thickness floating thereon, the device having oil in-flow ports (of lesser vertical height than the oil slick thickness) with the ports normally floated at a level intermediate the thickness of the oil slick to provide inflow of the water-floated oil slick and to minimize either water or air inflow through said ports whether the water is calm or disturbed by waves, and designed to collect oil from the water surface at a rate which is maximized subject to the requirement that intake of water and air is minimized. The device has a longest overall dimension of not more than one-fourth of the wavelength of the shortest wave of significant amplitude, and includes a generally H-shaped skimmer structure; each arm portion of the structure is of generally rectangular or circular cross section, providing a plurality of inflow ports, each of vertical dimension of the order from 0.04 to 0.2 of the expected slick thickness. Inflow ports preferably are positioned immediately adjacent the top surface of the structure, and are horizontally elongated. The device is provided with a flexible, buoyant suctioning hose communicating with the inflow ports for the removal of oil.

3,706,383
FLUID SEPARATOR

James R. Palma, 1502 Curry Road, Schenectady, N.Y.

Filed May 21, 1970, Ser. No. 39,296
Int. Cl. B01d *33/02*
U.S. Cl. 210—374 **6 Claims**

A fluid separator for separating solids from a liquid or separating a heavier substance from a lighter liquid substance by means of centrifugal force in conjunction with the eddy current principle comprising a housing or jacket containing a spirally formed fluid conduit for rotation within said housing adapted to convey fluid therethrough; the coils of the conduit are internally formed with a multiple of spaced abutments extending into the path of the fluid and openings are provided in the conduit adjacent each of the abutments to permit contaminants to exit from the conduit due to centrifugal forces created by the rotating spiral conduit which tends to flow the heavier substance or contaminant outwardly to the wall of the conduit; the abutments in the conduit extending into the path of the fluid set up eddy currents in the spinning liquid to spin adjacent the leading edge of the abutments in one direction

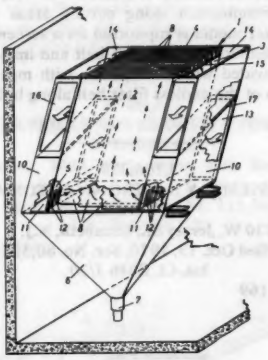


and around the trailing edge of the abutments in the reverse direction collecting the heavier substances disposed in the fluid which are then forced out through the apertures adjacent said abutments. Due to the centrifugal forces set up by the continuously spinning spiral conduit, fluid is effectively prevented from exit through the openings.

3,706,384
DEVICE FOR SEDIMENTATION OF PARTICLES FROM LIQUID

Gunnar Weijman-Hane, Vikingbergsvagen 4, Malmo, Sweden

Filed Aug. 6, 1970, Ser. No. 61,627
Claims priority, application Sweden, Aug. 8, 1969, 11111/69
Int. Cl. B01d *21/00*
U.S. Cl. 210—519 **7 Claims**



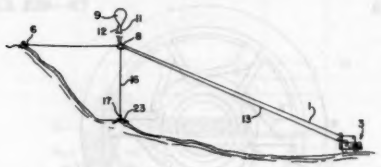
A device for sedimentation of particles from a liquid in which several plate-formed lamellae are arranged in and inclined at an angle in relation to the tank. The tank on both sides of said lamellae is provided with compartments which are separated by an inclined partition wall in a fluid-proof manner into two elongated partitions. (Through the lower of those partitions the liquid which is to be purified is supplied to the device and is fed through inlet openings at the lowermost edge). The lower of these partitions is provided with inlet openings to the lamellae space, whereby the upper edge of the tank is provided with a overflow to each of the upper partitions which has outlet openings for the purified liquid. The lowermost part of the tank is a funnel-shaped hopper having a sludge outlet.

3,706,385

AERIAL LOGGING SYSTEM

Fay H. Stewart, Eugene, Oreg., assignor to Bohemia Lumber Company, Inc., Eugene, Oreg.

Filed Nov. 25, 1970, Ser. No. 92,659
Int. Cl. B66c 19/00
U.S. Cl. 212—71 11 Claims



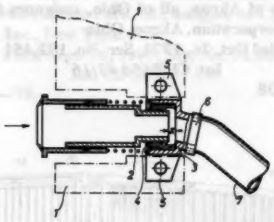
An aerial logging system for logging inclined terrain wherein a static lift balloon is anchored to a carriage engaged on a skyline which may be extended from an uphill point to a yarder drum at the landing. The skyline thus becomes inverted, having an apex at the point where the lift of the balloon is applied. A main line is used to haul the carriage downhill and the lifting force of the balloon moves the carriage uphill as the carriage seeks a natural apex along the skyline, a braking force being applied to the main line to control the speed of the carriage as it returns uphill. The lifting line and chokers are depended from the carriage.

3,706,386

LINE COUPLING FOR RAILWAY VEHICLES

Axel Schelle, Rottach-Scherfen, and Pierre Baronnet, Munich, both of Germany, assignors to Know-Bremse KG, Berlin and Munich, Germany

Filed July 29, 1970, Ser. No. 59,182
Int. Cl. B61g 5/08
U.S. Cl. 213—76 5 Claims



An automatic line coupler is centrally located in a bumper for a railway vehicle and has an intermediate element which is fixed on a coupler head. One end of a flexible line is rigidly secured to the intermediate element and a spring-loaded coupler element has its rear end mounted within a resilient deformable annular member closely fitted within the intermediate element.

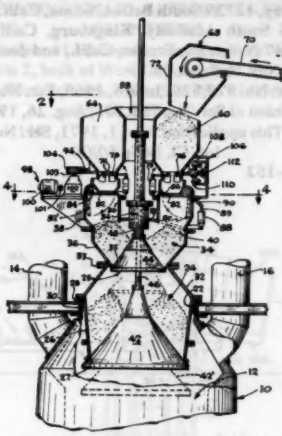
3,706,387

BLAST FURNACE CHARGING APPARATUS FOR HIGH TOP PRESSURE

Leo T. Tokarz, 13419 Greenbay Ave., Chicago, Ill., assignor to John Mohr & Sons, Chicago, Ill.

Continuation of Ser. No. 866,644, Oct. 15, 1969, abandoned.
This application Jan. 17, 1972, Ser. No. 218,341
Int. Cl. F27b 5/12
U.S. Cl. 214—37 6 Claims

An improved blast furnace charging apparatus for blast furnaces operating with the high top pressure, the apparatus including a revolving multi-chamber distributor hopper with swing valves to define a gas seal below the distributor hopper and material gates to prevent discharge of material on to the swing valves; the revolving mechanism being removed from any pressurized chamber of the charging apparatus.

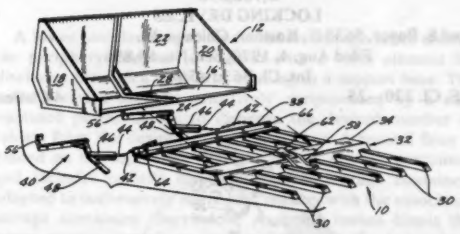


3,706,388

FORK ATTACHMENT FOR A LOADER BUCKET

Walter J. Westendorf, Smithland, Iowa

Filed Jan. 21, 1971, Ser. No. 108,327
Int. Cl. B66f 9/12
U.S. Cl. 214—145 6 Claims



A fork attachment for a loader bucket comprising a plurality of spaced apart teeth having a transverse plate means secured thereto rearwardly of the forward ends thereof. The plate means includes a rearwardly extending plate portion which is spaced above the teeth. An elongated angle member is secured to the rearward ends of the teeth and has a pair of chain tightener elements secured thereto. The attachment is secured to the loader bucket by driving the loader forwardly so that the leading edge of the bucket bottom is received beneath the plate portion to secure the forward end of the bucket to the attachment. The chain tightener elements are then secured to the upper rearward portion of the loader bucket to secure the rearward end of the attachment to the bucket.

Material handling devices such as front-end loaders, tractor loaders, etc., generally have a pair of pivotal booms provided thereon to which various attachments are secured. Many tractor loaders are used by ranchers and farmers to handle material such as dirt, gravel, etc. A bucket attachment is secured to the booms when the loader is being used for dirt, gravel, and similar materials. It is necessary to replace the bucket attachment with a fork attachment when materials such as manure, ensilage and the like are going to be handled since the conventional bucket attachment cannot adequately handle the material. The replacement of the fork attachment for the bucket attachment is time consuming and requires that a separate fork attachment be purchased even though the fork and bucket attachments are somewhat similar in design.

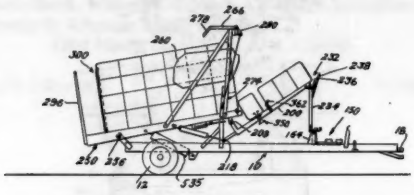
3,706,389
METHOD OF HANDLING BALES

Donald M. Grey, 12739 South Bethel, Selma, Calif.; Lee D. Butler, 13945 South Academy, Kingsburg, Calif.; Jerry W. Welker, 4847 N. 6th St., Fresno, Calif., and Jack W. Crane, R.D. No. 2, New Holland, Pa.

Division of Ser. No. 870,828, June 6, 1969, Pat. No. 3,638,808, which is a division of Ser. No. 755,141, Aug. 26, 1968, Pat. No. 3,502,230. This application Nov. 1, 1971, Ser. No. 194,305

Int. Cl. B65g *60/00*

U.S. Cl. 214—152 **3 Claims**



A bale wagon which unloads bales one at a time. The wagon is provided with a bale pick-up, a bale tier former, and a load rack which receives the tiers of bales from the bale tier former. A cross conveyor is mounted on the bale tier former, and when discharging the bales are dropped a tier at a time from the load rack onto the bale tier former, the lowest layer of bales on the tier being engaged by the cross conveyor and discharged, while the layer next above the lowest layer is held from interference with the lowest layer.

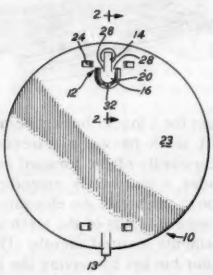
3,706,390
LOCKING DEVICES

Fred S. Boyer, 5638 N. Kostner, Chicago, Ill.

Filed Aug. 4, 1970, Ser. No. 60,896

Int. Cl. B65d *45/00*

U.S. Cl. 220—25 **4 Claims**



In a locking device for sheet metal plugs, plates and other opening closures of the type which are locked in place by imparting an impacting blow to the locking device, an aperture is positioned between the plate and locking device for receiving an unlocking tool for unlocking the device.

3,706,391
CLOSURE CAP FOR INSPECTION HOLES

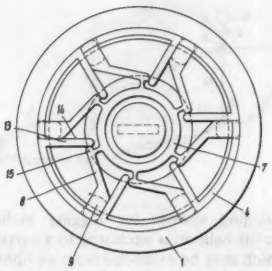
Gunter Wibrow, Bez Hamburg, Germany, assignor to ITW-Ateco G.m.b.H., Norderstedt, Germany

Filed July 19, 1971, Ser. No. 163,632

Int. Cl. B65d *45/00*

U.S. Cl. 220—25 **8 Claims**

This invention relates to a closure cap for inspection holes in the walls of housings of tool and fabrication machines, vehicles and the like. In particular for land and sea vehicles there is the desire to close holes in the housing or in the body with a closure cap, said holes serving an inspection of some parts or having to be accessible only occasionally for other reasons, said closure cap permitting a ready attachment and releasing again also without any particular difficulties, but on the other hand at least dustproof, if possible even spray-waterproof closing the hole in the wall. This closure cap is to also be able to be made in a simple and economical way, since it is to be removed and applied again by less skilled persons also depending on circumstances, and is to be formed simple and sturdy and is to be easy to handle.



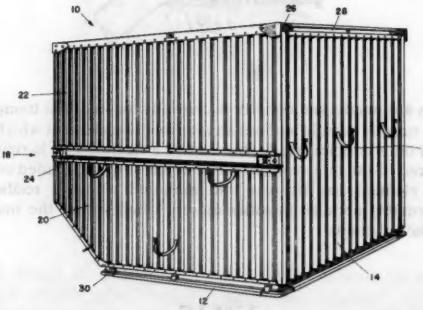
3,706,392
BAGGAGE AND CARGO CONTAINER DOOR MECHANISM

Walter F. Sprick; Frank C. Morse, both of Akron; Alexander Holzer, Cuyahoga Falls; Oscar W. Meller, and John W. Lovich, both of Akron, all of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Oct. 26, 1971, Ser. No. 192,451

Int. Cl. B65d *43/16*

U.S. Cl. 220—38 **17 Claims**

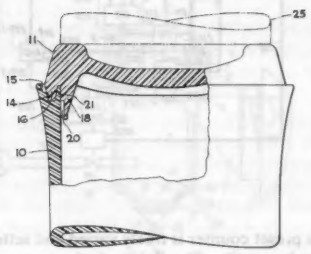


A door mechanism which forms an openable side of a cargo container. The door consists of upper and lower sections joined by a horizontal hinge. The doors are supported by means of brackets at the upper corners of the upper door sections which carry rollers running in tracks extending along the top of the container ends. Pins projecting from the lower edge of the lower door section engage suitable recesses in the container base when the doors are closed and a latch mechanism is provided for holding the door securely in its closed position.

3,706,393
PLASTIC CONTAINER AND METHOD OF MAKING THE SAME

George L. Curtis, Wilton, Conn.; James H. Riesenberg, Amherst, and Ralph E. Kelly, Lancaster, both of N.Y., assignors to Pelorex Corp., Buffalo, N.Y.

Filed July 12, 1971, Ser. No. 161,589
Int. Cl. B65d 7/42
U.S. Cl. 220—67 6 Claims



A plastic container has a cylindrical body member and a bottom member which are separately molded. The body member is formed with an open bottom and has an annular groove in its bottom edge. The bottom member has a pair of concentric upstanding annular flanges, the outer one fitting within the annular groove in the bottom edge of the body member, and the inner one fitting within the open bottom of the container to abut the lower portion of the interior wall thereof. The parts are permanently sealed to each other by ultrasonic welding, usually after a bottom-filling operation with the container in an inverted position.

3,706,394
ONE-AT-A-TIME DISPENSER

Edmund H. Merz, Palos Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

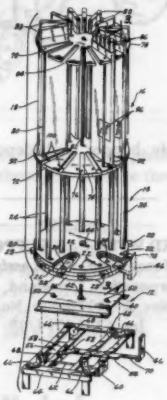
Filed Sept. 16, 1970, Ser. No. 72,681
Int. Cl. G07f 11/00
U.S. Cl. 221—75 6 Claims

A one-at-a-time dispenser which has an outer wall in the shape of a sidewall having a continuous screw thread. The top is rotatable and has two or more pins mounted in it, and extending through the objects to be dispensed. The bottom is removable and snaps onto a ring around the bottom of the dispenser.

3,706,395
SELECTIVE DISPENSER WITH CLIP STORAGE FOR DISPENSING SMALL ARTICLES IN PRESET QUANTITIES

John W. Havener, 114 Jones St., and Franklin W. Reyner, Jr., Rural Route 2, both of West Union, Iowa

Filed Feb. 16, 1971, Ser. No. 115,308
Int. Cl. B65g 60/00
U.S. Cl. 221—119 9 Claims



A lower circular floor includes tablet storage tubes around the periphery adapted to register with a valve element for discharge through a discharge opening in a support base. The valve element may be selectively reciprocated by a cam operated power device to dispense the desired number of tablets from the desired storage container. A second floor is placed on the top of the first plurality of storage containers and includes radially disposed clips of storage containers adapted to successively move into registry with the associated storage containers therebelow. A spring means biases the upper storage containers into registry with the lower containers as empty containers are removed. The clip of storage containers may be replaced when empty. The clip includes a bottom wall and an opening normally yieldably closed by a slide door which is moved to an open position when the clip is placed in position on the top floor with one of the plurality of containers in the clip being in registry with the associated lower container.

The counting of tablets when filling a prescription in a pharmacy is a time-consuming and laborious job. Also, errors can occur resulting in either two many or too few tablets being dispensed from the bulk containers into the customer container.

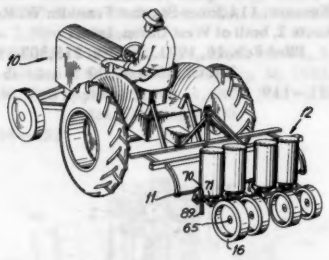
3,706,396
AGRICULTURAL PLANTING APPARATUS HAVING METERING MEANS

Philip B. Knapp, Lynbrook, and Jon R. Zogg, Baldwin, L. I., both of N.Y., assignors to Aptek Industries, Inc., Lynbrook, N.Y.

Filed July 23, 1970, Ser. No. 57,440
Int. Cl. B65g 59/00
U.S. Cl. 221—265 1 Claim

Planting apparatus for use with a powerized vehicle for depositing seed containing pellets in the ground at precisely

selected, spaced positions. The apparatus is powered by the linear advance of the vehicle and removes individual pellets from a bulk supply hopper and deposits the same in a discharge chute.



3,706,397

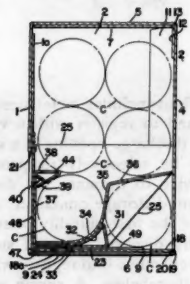
GRAVITY FEED WITH CAN SUPPORTED INSERT

Alan F. Zellinger, Beachwood, Ohio, assignor to Magic American Chemical Corporation, Cleveland, Ohio

Filed Nov. 23, 1970, Ser. No. 91,957

Int. Cl. A47f 1/08

U.S. Cl. 221—311 **6 Claims**



A gravity feed display pack for aerosol cans and the like is described, which is characterized by the use of an insert, which can be quickly and easily installed in the pack, and is utilized for automatically dispensing the cans, while the pack is on a display counter. A feature of the invention is the use of a retainer which not only holds the insert and cans within the pack during shipping and storage of the pack, but can be quickly and easily removed, just prior to placement of the pack on a display counter.

3,706,398

FIXED QUANTITY LIQUID SUPPLYING APPARATUS USING FLUIDIC DEVICES

Mahiko Kato, Tokyo; Isamu Saito, Totsuka-ku, Yokohama, and Tuneo Nishiba, Asahi-ku, Yokohama, all of Japan, assignors to Tokico Ltd., Kanagawa, Japan

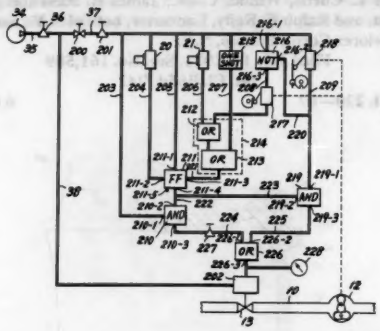
Filed Oct. 30, 1970, Ser. No. 85,322

Claims priority, application Japan, Nov. 1, 1969, 44/87779; Aug. 24, 1970, 45/73633

Int. Cl. B67d 5/30

U.S. Cl. 222—20 **4 Claims**

A fixed quantity liquid supplying apparatus performs a liquid supplying operation of predetermined fixed quantity with a control fluidic circuit using fluidic devices. The control circuit is operated by a preset counter which operates when the supplied quantity of the liquid reaches the fixed quantity. The fuel supplying is stopped in multiple stages by the control circuit. The preset counter is freely varied and setted with the variable fixed quantity. The fluidic devices are operated by fluid such as air.



3,706,399

MEANS FOR REGULATING THE FLOW-RATE OF MELT FROM A CONTAINER

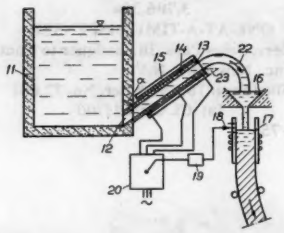
Yngve Sundberg, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed May 6, 1970, Ser. No. 34,988

Claims priority, application Sweden, May 21, 1969, 7147/1969

Int. Cl. B22d 37/100

U.S. Cl. 222—56 **3 Claims**



A furnace or ladle for melt has an outlet tube extending upwardly from its bottom at an angle from the vertical. An electromagnetic valve around the tube controls the flow of melt through the tube to some desired value.

3,706,400

DISTRIBUTOR APPARATUS

Claude Schindler, Geneva, Switzerland, assignor to Zyma S.A., Vand, Switzerland

Filed Dec. 21, 1970, Ser. No. 99,854

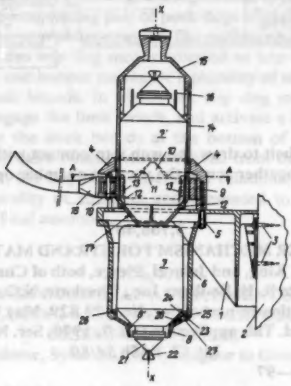
Claims priority, application Switzerland, Dec. 29, 1969, 19357/69

Int. Cl. B65d 35/54

U.S. Cl. 222—95 **3 Claims**

A distributor for a liquid product comprises a body having support means for fixation to a wall or the like, a crushable interchangeable recipient containing the liquid product housed in said body, and a piston resting by gravitation on the recipient. A horizontally displaceable operating lever is connected to means for actuating the piston, and cam means

transform a horizontal movement of the operating lever into a vertical movement of the piston-actuating means to lower the



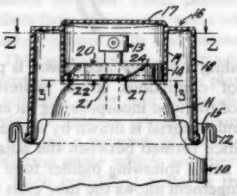
piston and thus crush the recipient by a determined quantity, thereby causing outflow of a dosed quantity of product.

3,706,401

CHILD-PROOF OVERCAP FOR AN AEROSOL CAN

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastic Corporation, Evansville, Ind.

Filed July 15, 1970, Ser. No. 54,925
Int. Cl. B67d 5/32
U.S. Cl. 222—153 **4 Claims**



A child-proof over cap for an aerosol can. The cap has a skirt with two or more inwardly protruding lugs at its lower edge which are evenly spaced circumferentially. There is an annular element on the can which has a similar number of outwardly extending lug threads adapted to be engaged by the lugs. The lug threads have downwardly extending bottom surfaces leading to upwardly extending undercut recesses in which the lugs on the cap skirt may be engaged. The cap has a resilient top from which the skirt depends and which is deformed by engagement of the lugs and the lug threads for biasing the lugs into the thread recesses to restrain relative horizontal rotation of the cap and can.

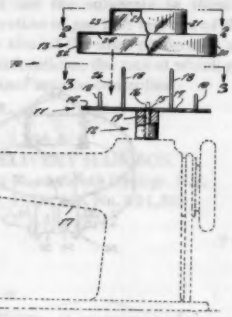
3,706,402

SEWING MACHINE MULTIPLE THREAD DISPENSER

James Oscar O'Leary, 578½ East Main, Chillicothe, Ohio

Filed Nov. 9, 1970, Ser. No. 88,063
Int. Cl. A41h 31/00
U.S. Cl. 223—106 **2 Claims**

A platform normally supported upon an upstanding spindle normally provided upon a sewing machine head provided for usually supporting a spool of thread, and the platform having a plurality of upstanding spindles secured upon the upper side thereof so to individually support various different threads on



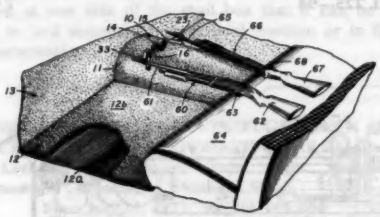
spools, and the peripheral edge of the platform being indented with notches or slots through which the thread from the spools can be fed.

3,706,403

GUN HOLDING DEVICE

Robert L. F. Sikes, Rt. 1, Crestview, Fla.

Filed Oct. 26, 1971, Ser. No. 192,359
Int. Cl. F41c 33/00
U.S. Cl. 224—1 R **10 Claims**



A vehicle gun holding device for holding a gun such as a shotgun or rifle within a vehicle that has a floor with a generally curved longitudinal raised portion surrounding the upper portion of the vehicle's drive shaft and a seat mounted on the floor that includes a base that is generally shaped to fit crosswise on the curved longitudinal raised portion of the floor of the vehicle. A curved hook member is located on the upper surface of the portion of the base that is shaped to fit on one side of the raised portion of the vehicle floor and a second hook member is located on the upper surface of the portion of the base that is shaped to fit on the opposite side of the raised portion of the vehicle floor. The free end portions of the hook members point generally inward and the hook members are each adapted to receive and hold a portion such as the barrel or stock of a gun that has another portion that is resting against the vehicle seat. The vehicle gun holding device permits guns to be conveniently held within a vehicle out of the way of the vehicle occupants and yet the guns are readily accessible for prompt use if needed.

3,706,404

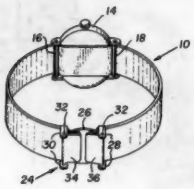
STRETCH FABRIC WATCHBAND

Gerald W. Gluckin, 180 Madison Ave., New York, N.Y.

Filed Sept. 24, 1970
Int. Cl. A 44c 5/22
U.S. Cl. 224—4 **1 Claim**

A length of stretch fabric which is readily selectively engaged with a wristwatch and held, by a clip or the like,

by its likewise free ends in a closed loop so as to effectively function as a watchband. The fabric is selected to coordinate



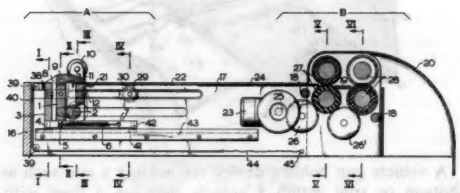
with the wearer's attire and the stretch thereof facilitates placement and removal of the band from about the wearer's wrist.

3,706,405

APPARATUS FOR SEPARATING COPYING TESTS

Hans Meyer, Horneburg NE, Germany, assignor to Hans Meyer Fabrik Vordruck-Systeme und Organisationsmittel GroBdruckerei und Verlat, Horneburg, Germany

Filed July 8, 1971, Ser. No. 160,866
Int. Cl. B26f *3/02*
U.S. Cl. 225—94 **7 Claims**



The apparatus for separating paper sheets from interleaved carbon sheets of a copying set consists of a pair of driven gripping rollers for seizing the copying set along its jointing edge, and a clamping carriage spaced from the gripping rollers with its clamping slot arranged opposite to the gripping slot of the gripping rollers. The carriage is provided for limited to-and-fro movement with respect to the gripping rollers. THe apparatus allows to safely separate paper and carbon sheets with high speed and without paper damage. Additional cutter spindles can be provided for cutting the carbon sheets into smallstrips.

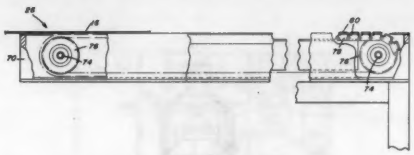
3,706,406

WEB TRANSPORT APPARATUS

Robert J. Borel, Rochester; Leonard S. Corey, Victor; Thaddeus W. Kucharski; John L. Stocking, both of Rochester, and Frederick H. Thomas, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 727,558, May 8, 1968, Pat. No. 3,535,212. This application Jan. 7, 1970, Ser. No. 6,012
Int. Cl. B65h *17/28*
U.S. Cl. 226—95 **5 Claims**

Apparatus for moving a web above a vacuum chamber comprising a vacuum chamber which has an opening in its upper surface and a foraminous belt movable within the chamber. A portion of the belt moves in the opening to support and move the web from the underside. A vacuum is applied to the vacuum chamber to create a sub-atmospheric pressure under



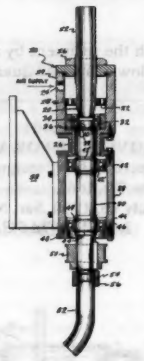
the moving belt to draw the web into contact with the belt as they move together across the vacuum chamber opening.

3,706,407

PIDDLER MECHANISM FOR STRAND MATERIAL

Carles S. W. King, and John H. Pierce, both of Charlotte, N.C., assignors to R. H. Bouligny Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 823,829, May 12, 1969, abandoned. This application Oct. 7, 1970, Ser. No. 78,872
Int. Cl. B65h *54/80*
U.S. Cl. 226—97 **10 Claims**



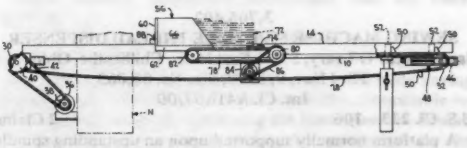
Means including a piddler mechanism is provided for coiling delivery of continuous strand material. The piddler mechanism is of the type incorporating an entrance tube into which the strand material is drawn by aspiration generated at an annular orifice formed between the adjacent ends of the entrance tube and a following piddler tube that rotates. The structural arrangement allows the tube ends to be set in closely spaced telescoping relation for forming the annular orifice, and an advantageously shortened strand path and special form of delivery chute are employed in one embodiment. Means for feeding the strand material to the piddler mechanism is also included that optionally employs a specially formed roll for freeing the feeding strand material as it is drawn into the entrance tube.

3,706,408

FEEDING AND CONVEYING DEVICE FOR AUTOMATIC NAILING MACHINES

Randolph Burch, Summit Point, W. Va.

Filed Dec. 8, 1970, Ser. No. 96,168
Int. Cl. B27f *7/02*
U.S. Cl. 227—45 **12 Claims**



A device for use in the assembly of pallets, and particularly for feeding and conveying transverse pallet stringers and lon-

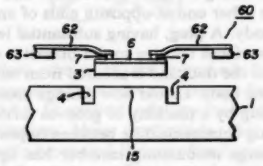
gitudinal deck boards in assembled, unsecured relationship to an automatic nailing machine for nailing the stringers and deck boards together. The device includes longitudinal chain conveyors at either side of the device, each chain conveyor having a plurality of push dogs in longitudinal spaced relationship, each corresponding pair of push dogs engaging and conveying a transverse pallet stringer. The endless chain conveyor further includes trip dog means adapted to trip a stationary limit switch, and hopper means for a plurality of stacks of longitudinal deck boards, in which the trip dog means of the chain will engage the limit switch, and activate a longitudinal push bar for the deck boards at the bottom of each stack, whereby such deck boards will be moved from the bottom of each stack in the hopper in assembled relationship onto the top of a plurality of stringers and presented to the nailing machine for final assembly.

3,706,409

SEMICONDUCTOR LEAD ATTACHMENT SYSTEM INCLUDING A SEMICONDUCTOR PELLET ORIENTATION PLATE

Edwin H. Lederer, Syracuse, N.Y., assignor to General Electric Company

Filed Feb. 26, 1970, Ser. No. 14,376
Int. Cl. B23k 1/00
U.S. Cl. 228—6 **2 Claims**



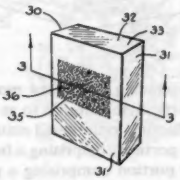
This invention relates to a semiconductor lead attachment system which is particularly useful in the automatic application of external leads to contact areas formed on pellets or dice of semiconductor material. These pellets, prior to subdivision of the pellets from the parent wafer which they constitute, are precisely engaged with and located on a pellet orientation plate. This is accomplished by attaching the parent wafer to the top surface of the orientation plate with a thermally releasable adhesive layer and subdividing the parent wafer with a plurality of grooves into individual pellets while at the same time forming a network of pedestal-shaped supports in the orientation plate which are thermally isolated from each other. Each individual pellet is then selectively released and removed from the orientation plate during the course of heating each pellet while the leads are being bonded thereto.

3,706,410

AIR PERMEABLE CONTAINER

David R. Baker, Concord, Calif., assignor to Fibreboard Corporation, San Francisco, Calif.

Filed Nov. 16, 1970, Ser. No. 89,977
Int. Cl. B65d 5/00
U.S. Cl. 229—16 R **4 Claims**



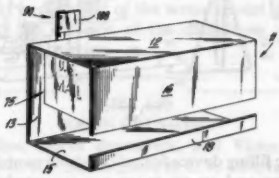
Tightly sealed containers are formed from blanks made of a substrate permeable to gas with a coating of a material substantially impermeable to gas applied to at least one surface of the blank. Selected areas of the coated surface of the blank are treated with a perforating material to form perforations through the coating but not the substrate in these areas, thereby permitting penetration of gas into and out of the container. By control of the size of the area perforated and the number and size of the perforations, the rate at which gas may enter and leave the container may be controlled.

3,706,411

RURAL DELIVERY MAIL BOX

Milton Klein, 610 Overhill Road, South Orange, N.J.

Filed Dec. 28, 1970, Ser. No. 101,586
Int. Cl. A47g 29/12
U.S. Cl. 232—17 **7 Claims**



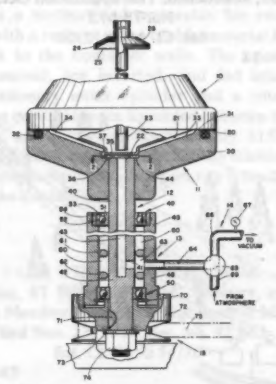
This rural delivery mail box comprises an upper compartment closed by a front, upwardly and forwardly swinging hinged door, to contain letters, and a shelf therebelow to receive newspapers and magazines. The shelf is open at both ends and has a through passage at one side. A flag is so mounted at one side of the mail box that it can be easily moved to and maintained in vertical position or in flipped back horizontal position.

3,706,412

PRESSURE-ACTUATED CENTRIFUGE CHUCK AND CENTRIFUGE INCORPORATING THE SAME

Allen Latham, Jr., Jamaica Plain, Mass., assignor to Haemonetics Corporation, Waltham, Mass.

Filed July 28, 1971, Ser. No. 166,865
Int. Cl. B01d 21/26
U.S. Cl. 233—1 B **10 Claims**



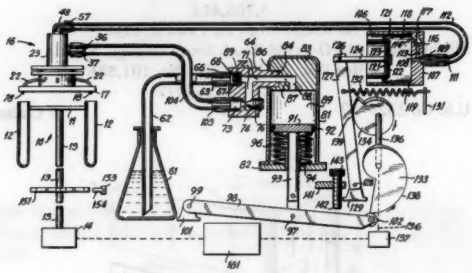
A chuck suitable for holding a centrifuge rotor during centrifuging and requiring only minimum skill to place in position. The rotor is held by atmospheric pressure by creating a vacuum under the rotor base. Evacuation is by way of a fluid flow path extending through a portion of the spindle on which the chuck is mounted. Means responsive to the pressure in the system may be used to control the operation of the motor driving the spindle and rotor to ensure locking of the rotor prior to startup.

3,706,413

AUTOMATIC FILLING APPARATUS FOR CELL WASHING CENTRIFUGE

Josef Blum, Norwalk, Conn., assignor to Ivan Sorvall Inc., Newton, Conn.

Filed July 30, 1970, Ser. No. 59,590
Int. Cl. B04b 9/12
U.S. Cl. 233—26 23 Claims



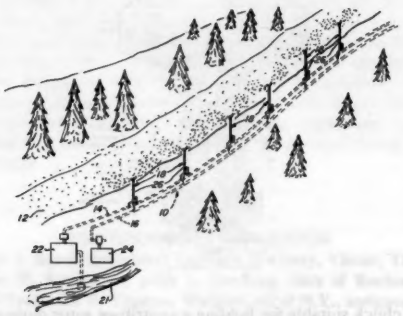
Automatic filling device for cell washing centrifuge in which a liquid pump and an air pump are operated in alternating timed sequence whereby a plurality of centrifuge tubes arrayed on a rotor are first filled simultaneously with a metered amount of washing liquid through a plurality of injection nozzles, and subsequently the said nozzles are purged of residual liquid by discharge of an air stream under pressure. An injection nozzle manifold is mounted above the centrifuge rotor whereby each nozzle is aligned to inject wash liquid directly into a respective centrifuge tube. Means are also provided for varying and controlling the amount of wash liquid to be injected into the centrifuge tubes. Further means are provided for repeating the sequential filling and purging cycle for successive washing procedures.

3,706,414

APPARATUS AND METHOD FOR MAKING SNOW

Herman K. Dupre, Seven Springs, Champion, Pa.

Continuation-in-part of Ser. No. 756,749, Sept. 3, 1968, abandoned, and a continuation-in-part of Ser. No. 828,292, May 27, 1969, abandoned. This application Oct. 7, 1970, Ser. No. 78,873
Int. Cl. A01g 15/00
U.S. Cl. 239—14 17 Claims



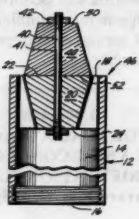
A method and apparatus for making snow and more particularly a method and apparatus whereby pressurized air and water are introduced into a conduit at a lower portion thereof and thereafter flows upwardly through such conduit to be discharged therefrom on a selected area and at a height and/or location to eliminate interference with users of the area upon which the manufactured snow settles.

3,706,415

LIQUID DISCHARGE NOZZLES

John O. Hruby, Jr., Burbank, Calif., assignor to Rain Jet Corp., Burbank, Calif.

Continuation-in-part of Ser. No. 784,541, Dec. 9, 1968, Pat. No. 3,558,053, which is a continuation-in-part of Ser. No. 691,111, Dec. 8, 1967, abandoned, which is a continuation-in-part of Ser. No. 492,389, Oct. 4, 1965, abandoned. This application Jan. 25, 1971, Ser. No. 109,532
Int. Cl. B05b 17/08
U.S. Cl. 239—17 13 Claims



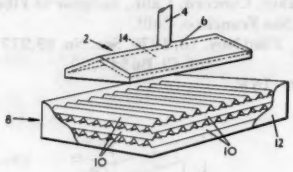
A family of aerating liquid discharge nozzles, each of which has the feature that it contains no moving parts and includes a hollow body defining a liquid inlet at one end and an outlet opening at the other end at opposite ends of an internal duct through the body. A plug, having substantial length between opposite end surfaces relative to the diameter of the duct, is disposed across the duct and is secured from movement along the length of the body. Liquid flow passage means are defined through the plug by a plurality of grooves formed in the side walls of the plug communicating between opposite ends of the plug. A discharge modulating member has opposing closed end end surfaces, one of which is coupled to the plug coaxially thereof and has a maximum transverse extent no greater than the minimum transverse extent of the adjacent end of the plug between opposed grooves in the plug side walls. By varying the configuration and/or position of the modulating member, a wide variety of discharge patterns may be produced.

3,706,416

APPARATUS FOR RINSING SMALL PARTICULATE MATERIAL

Raymond Oliver Hoult, Burton upon Trent, Straffordshire, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Feb. 23, 1971, Ser. No. 118,038
Claims priority, application Great Britain, March 3, 1970, 10,126/70
Int. Cl. B05b 1/36
U.S. Cl. 239—193 8 Claims



Apparatus for producing small slow moving water droplets for rinsing small particulate material so as to remove fine particulate material adhering to the small material. The apparatus including an upper portion comprising a feed pipe and a baffle plate, and a lower portion comprising a plurality of layer of angle bar sections, the sections in each layer being parallel to each other and arranged transverse to the sections in an adjacent layer.

3,706,417

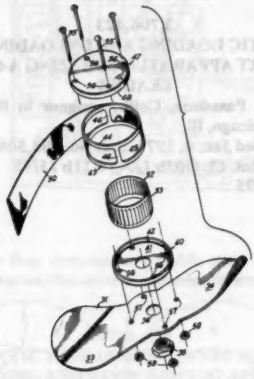
LIQUID SPRAYING METHOD AND APPARATUS

Keith H. Patrick, Montgomery, Ala., assignor to King Around Products, Inc., Montgomery, Ala.

Continuation-in-part of Ser. No. 686,425, Nov. 28, 1967, Pat. No. 3,552,650, and a continuation-in-part of Ser. No. 43,352, June 4, 1970, Pat. No. 3,655,130. This application Jan. 29, 1971, Ser. No. 110,834

Int. Cl. A01n *17/68*

U.S. Cl. 239—222 8 Claims



This invention relates to an improved liquid spraying method and apparatus for use in generating a fog-like array of sprayed material to be applied to foliage for pest control or for fertilizer distribution. More particularly, this invention includes a rotatably supported spraying head having an endless diffusion member concentrically mounted relative to the rotation axis of the spraying head. The diffusion member is provided with a plurality of perforations therein for separating into finely divided form, liquid passing therethrough. A liquid dispensing nozzle is in flow communication with the spraying head for introducing liquid into the inside surface thereof. An annular distribution and directing member is coaxially mounted with the spraying head for developing circulating currents of air pressure to effect an even distribution of the liquid introduced therein and for directing the liquid outwardly through the perforations in the diffusion member. An impellar means is operatively associated with the spraying head for producing a uniform blast of air axially in one direction along the outside surface of the diffusion member to generate a fog-like array of sprayed material in a radially and axially extending direction.

3,706,418

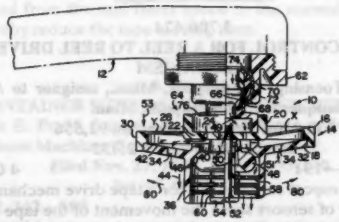
AERATOR

Robert W. Hyde, 1 Putter Place, Crystal River, Fla.

Filed Aug. 26, 1971, Ser. No. 175,189

Int. Cl. E03c *1/08*

U.S. Cl. 239—428.5 22 Claims



A water aerating device having a housing which comprises a diaphragm cap and a nozzle cap cemented, welded or pressed fitted together such that movement of a diaphragm integrally formed on the diaphragm cap causes relative movement of the nozzle cap and a change in the configuration of a spray chamber formed therebetween Sealing means is positioned in cooperative relation with a portion of the nozzle cap which is movably disposed so as to move into and out of sealing engagement with the sealing means wherein the sealing means may be automatically centered by virtue of it being movably connected within the housing. The device may be immovably attached to a water outlet or alternatively may include a swivel means interconnecting the housing to an adapter which is attached to the water outlet wherein a combined bearing and seal is positioned between the swivel means and the adapter to allow movement of the housing relative to the water outlet. Issuance of water from the device through a nozzle formed on the nozzle cap is in the form of an aerated stream wherein issuance of the water from fluid passages in the housing is in the form of a spray and control of the water's point of issuance is determined by the location of the diaphragm in a non-extended or extended position.

3,706,419

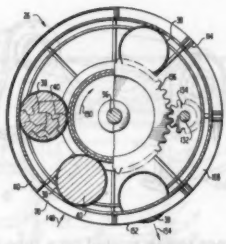
RESIN CRUSHER

Michael Phillips, North Brunswick, and Victor A. Jurow, Freehold, both of N.J., assignors to L. A. Dreyfus Company, South Plainfield, N.J.

Filed Jan. 21, 1971, Ser. No. 108,409

Int. Cl. 214 *311*; B02c *4/02*

U.S. Cl. 241—220 11 Claims



Disclosed is a method and apparatus for emptying containers filled with a resin or other friable material having a tendency to stick to the container walls. The containers have their tops removed, are inverted, and fed into the space between a stationary outer cylinder and a rotatable inner cylinder. These containers are squeezed between the cylinders as they rotate and progress approximately 315° about the periphery of the inner cylinder, so that the friable material is cracked and broken up and falls by gravity from the open, inverted top of the container.

3,706,420

YARN WINDING MECHANISM

Manuel Lapidas, 47 Windmill Drive, Sudbury, and John C. Maull, Rock Meadow Road, Uxbridge, both of Mass.

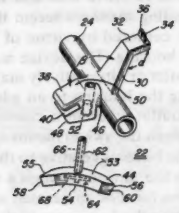
Filed Nov. 23, 1970, Ser. No. 92,062

Int. Cl. B65h *54/30*

U.S. Cl. 242—43 6 Claims

In a yarn winding mechanism wherein a length of yarn is wound onto a rotating bobbin, a yarn guide comprising a body supported for movement back and forth along a reciprocal path. A cam follower is affixed to a shaft which is rotatably supported by a metal sleeve positioned in an opening in the body, and the cam follower is adapted to move in a cam comprising a cylinder having a groove which is configured to permit the body to move along the reciprocal path. A yarn guide member is attached to the body for constraining the yarn to properly guide the yarn onto the bobbin. The body, cam fol-

lower, and shaft are made of a molded plastic of sufficiently high impact strength to withstand the forces applied to the guide to prevent deformation and breaking thereof and of a sufficiently low coefficient of friction to permit the body to



move along the reciprocal path at the required operating speeds. The cam follower and shaft have a reinforcing member embedded therein which provides sufficient flexural rigidity to substantially prevent bending deforming, and breaking of the cam follower and shaft.

3,706,421

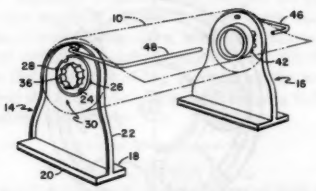
PAPER TOWEL RACK

Orville G. Popham, 6530 Hollow Lane, Loveland, Ohio

Filed May 28, 1971, Ser. No. 148,017

Int. Cl. B65h *19/00*

U.S. Cl. 242—55.2 **10 Claims**



A rack for paper towels wound on a tube is constructed of two identical molded brackets mounted in opposed relationship by means of a pressure sensitive adhesive. The tube is supported by means of bayonet type supports extending through the brackets into the tube.

3,706,422

ENDLESS TAPE CARTRIDGE

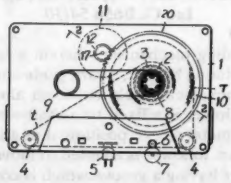
Fukuzo Ito, Totsuka-ku, Yokahami-shi, Kanagawa-ken; Masaoki Sekine, Kawasaki-shi, Kanagawa-ken, and Yasusuke Arai, Machida-shi, Tokyo, all of Japan, assignors to Tokyo Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed March 13, 1970, Ser. No. 19,186

Claims priority, application Japan, March 18, 1969, 44/20222

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.19 A **6 Claims**



According to the present invention, a magnetic tape is allowed to run in a normal way and can be taken up on a hub in a convoluted manner, even if the endless cartridge is mounted upside down, on a sound-recording and playback apparatus or such sound-recording and playback apparatus is operated with said apparatus itself being turned upside down. The present invention is featured, among others, by the fact that a rotary member adapted to receive the tape wound up on the hub and to give rotational movement to the wound up tape is provided in the cartridge in opposed relation with a rotary plate serving as a tape receiver means in the endless cartridge.

3,706,423

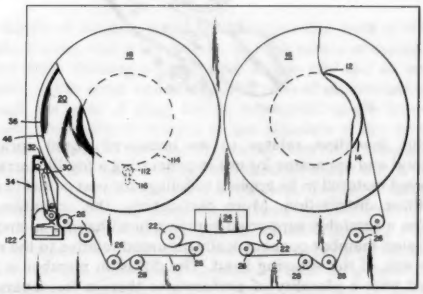
AUTOMATIC LOADING AND UNLOADING TAPE TRANSPORT APPARATUS UTILIZING A CAPTIVE LEADER

Joseph J. Neff, Pasadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 4, 1971, Ser. No. 103,509

Int. Cl. G03b *1/04*; G11b *15/32*

U.S. Cl. 242—195 **14 Claims**



Captive leader web loading and unloading apparatus for automatically capturing the free end of a take-up leader extending along the web transport path, at the conclusion of the supply web rewind operation. A capture device automatically decouples a supply leader from the captive leader without requiring the application of auxiliary motions to the supply reel after rewind. The device includes a bistable mechanism having a first stable configuration for cooperating with the take-up leader such that the take-up leader is captured along the web transport path, and a second stable configuration for releasing the take-up leader when coupled to the supply leader. The bistable mechanism is actuated to assume its first stable configuration, by the take-up leader during decoupling from the supply leader. After automatic coupling of the take-up leader and the supply leader, the take-up leader actuates the bistable mechanism to assume its second stable configuration.

3,706,424

STOP CONTROL FOR A REEL TO REEL DRIVE MECHANISM

Eyvand E. Toensing, Minneapolis, Minn., assignor to Audiomatic Techniques Inc., Minneapolis, Minn.

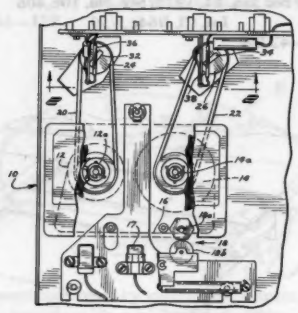
Filed Nov. 25, 1970, Ser. No. 92,556

Int. Cl. B65h *63/02*, *25/32*

U.S. Cl. 242—191 **4 Claims**

A tape transport stop control for a tape drive mechanism in which a pair of sensors sense the movement of the tape at two spaced apart positions, such as by sensing movement of the take-up reel and the supply reel, respectively. The tape drive is stopped when either sensor fails to sense tape movement. The sensors associated with tape movement periodically cause a

bistable flip flop to operate between its respective stable states in response to output signals associated with tape movement.



When the flip flop remains in a stable state for a predetermined time interval, the drive mechanism is stopped.

3,706,425

AUTOMATIC TAPE LOADING TYPE MAGNETIC RECORDING AND REPRODUCING APPARATUS

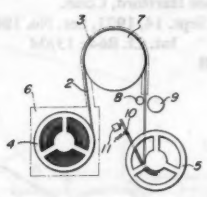
Masahiro Deguchi, Higashi-Osaka, and Masaru Hashirano, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 6, 1971, Ser. No. 160,035

Claims priority, application Japan, July 8, 1970, 45/60419

Int. Cl. G03b *1/04*; G11b *15/32*

U.S. Cl. 242—195 **3 Claims**



An automatic tape loading type magnetic recording and reproducing apparatus of the kind employing a leader tape of a predetermined length which is spliced to the forward end of a magnetic tape so that the leader tape is first guided along a predetermined path when the magnetic tape is to be loaded and when loading the magnetic tape, the leader tape is fed at a speed faster than the normal tape speed so that when the magnetic tape following the leader tape is placed in its correct predetermined path, its running speed is automatically switched from the said faster speed to the normal tape speed to thereby reduce the tape loading time.

3,706,426

CONTAINER WITH BRAKE FOR ENCLOSED REEL

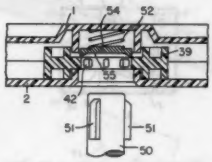
Marvin E. Prahl, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,320

Int. Cl. G11b *23/08*

U.S. Cl. 242—198 **2 Claims**

A cartridge stores a magnetic recording tape on two reels which are rotated when the cartridge is mounted on a drive spindle. Reels are prevented from turning inside the unmounted cartridge by a brake which is released when the cartridge is mounted. In one embodiment, the brake frictionally bears against the reel, and in another embodiment, fingers on



the brake engage reel locking fingers. In both cases, the reel is released when the drive spindle disengages the brake from the reel.

3,706,427

CINEMATOGRAPHIC APPARATUS

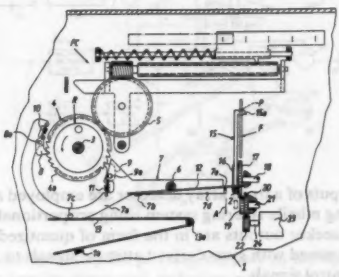
Anton Theer, Munich, Germany, assignor to Agfa Gevaert A.G., Munich, Germany

Filed Aug. 23, 1971, Ser. No. 173,771

Claims priority, application Germany, Aug. 27, 1970, P 70 31 984.5

Int. Cl. B11b *15/32*; G03b *1/04*

U.S. Cl. 242—205 **15 Claims**



The takeup reel of a cimenatographic apparatus is rotated by the claw pull-down which pivots one arm of a two-armed lever by way of a torsion spring. The other arm of the lever carries two pivotable spring-biased pawls which cooperate with a toothed wheel on the takeup reel in such a way that one of the pawls rotates the wheel in a direction to enable the takeup reel to collect the film when the pull-down pivots the lever in a clockwise direction and that the other pawl rotates the wheel in the same direction as the one pawl when the pull-down pivots the lever in a counterclockwise direction.

3,706,428

DISPATCH AND RECEPTION STATION FOR PNEUMATIC TRANSMISSIONS

Claude Carlier, 24 rue de Romainville, Montreuil, France

Filed Oct. 5, 1971, Ser. No. 186,284

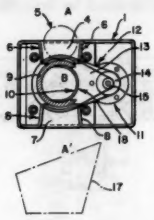
Claims priority, application France, Oct. 5, 1970, 7035816; Sept. 14, 1971, 7133045

Int. Cl. B65g *51/32*

U.S. Cl. 243—19 **9 Claims**

A station for a pneumatic transmission has an enclosure with concentric half-tubes mounted therein forming an extension of the pneumatic transmission line. The half-tubes are

rotated together in the same direction one through a quarter turn and the other through a three-quarters turn selectively to



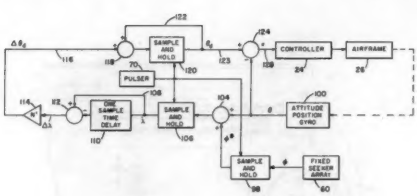
open upward to form a receiving opening; to open downward to form a discharge opening; and to form a closed extension of the transmission line.

3,706,429

MISSILE PROPORTIONAL NAVIGATION SYSTEM USING FIXED SEEKER

Gordon D. Welford, and Buster E. Kelley, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Navy

Filed Jan. 14, 1970, Ser. No. 7,325
Int. Cl. F41g 7/00; F42b 15/02, 15/10
U.S. Cl. 244—3.19 **3 Claims**



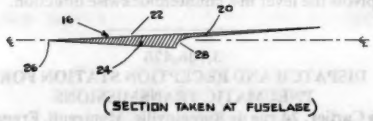
The outputs of a fixed array detector are employed as inputs to a homing missile steering system using proportional navigation. The seeker outputs are in the form of quantized signals, and are summed with gyro-derived attitude signals to produce missile control signals.

3,706,430

AIRFOIL FOR AIRCRAFT

Richard L. Kline, 24 Mersereau Avenue, Mount Vernon, N.Y., and Floyd F. Fogleman, 14 Drumlin Drive, Morris Plains, N.J.

Filed March 17, 1970, Ser. No. 20,195
Int. Cl. B64c 3/14
U.S. Cl. 244—35 **6 Claims**



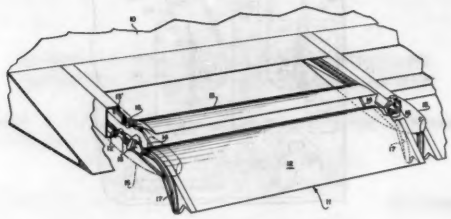
An airfoil for fixed and rotary wing aircraft comprising a continuous upper surface that joins with a generally planar portion of the under surface at the leading edge to form the apex of a wedge-like airfoil section that extends toward and terminates abruptly in advance of the trailing edge.

3,706,431

AUXILIARY FLAP ACTUATOR FOR AIRCRAFT

Donald G. Smith, Kennesaw, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Jan. 14, 1971, Ser. No. 106,406
Int. Cl. B64c 3/50
U.S. Cl. 244—42 DA **10 Claims**



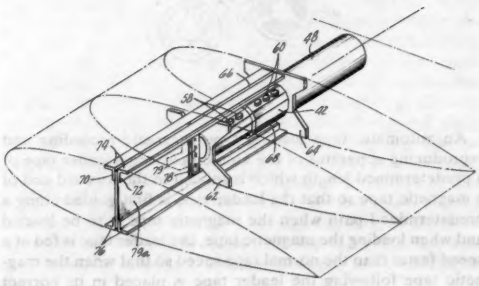
This device controls movement of the wing vane, during the flap and vane deployment cycle. It retains the vane at its retracted position during initial flap motion and, upon attainment of proper flap-vane gap, utilizes the flap's powered motion to attain both flap and vane extension/retraction, providing a rigid structural interconnect between the flap and vane during the vane deployment cycle.

3,706,432

REDUNDANT STABILIZER SUPPORT

John Accashian, Newtown, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 14, 1971, Ser. No. 180,295
Int. Cl. B64c 13/04
U.S. Cl. 244—83 R **7 Claims**



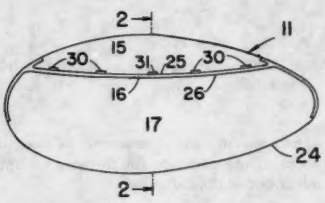
A horizontal stabilizer for a helicopter has two airfoil sections, one on each side of a tail cone. A stabilizer joining and torque tube mechanism comprising two concentric tubes mounted on bearings in the tail cone extends through the tail cone and beyond into the airfoil sections wherein the tubes terminate at laterally spaced points, the inner tube being longer than the outer tube. To transmit torque from the shafts to the airfoil sections a torque tube housing is provided in each airfoil section which conforms externally to and is connected to its airfoil section and which receives the end portions of both tubes and is bolted to them. An actuating lever for the stabilizer is provided on the torque tube mechanism within the tail cone which is connected to pilot controlled linkage.

3,706,433

AIRSHIP WITH INTERNAL TRANSFER OF LIFTING GAS

Miles H. Sonstegaard, 95 South Hill Ave., Fayetteville, Ark.

Filed Sept. 28, 1970, Ser. No. 75,954
Int. Cl. B64b 1/58
U.S. Cl. 244—128 20 Claims



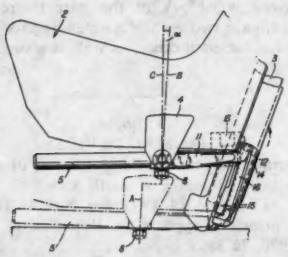
Passageways controlled by valves interconnect a permanent lifting-gas chamber with a high-altitude lifting-gas chamber that at low altitude may carry cargo gas, fuel gas, or ballast air. Once the high-altitude lifting-gas chamber is empty, the airship can ascend to high altitude, a portion of the lifting gas flowing from the permanent lifting-gas chamber to the high-altitude lifting-gas chamber; during descent, the transferred lifting-gas is returned to the permanent lifting-gas chamber.

3,706,434

VEHICLE EJECTION SEATS

James Martin, Southland Manor, Southland Road, Denham near Uxbridge, England

Filed Feb. 26, 1968, Ser. No. 708,201
Claims priority, application Great Britain, March 17, 1967, 12,777/67; April 19, 1967, 18,055/67
Int. Cl. B64d 25/10
U.S. Cl. 244—122 AD 18 Claims



The invention concerns an ejection seat having a rocket motor for assisting in the ejection sequence, the direction of the thrust line of the rocket motor being automatically alterable in response to movement of the pan of the seat with respect to the frame thereof so that the thrust line always passes approximately through the center of gravity of the seat/airman combination even though such center may move substantially as a result of airmen of differing heights using the seat.

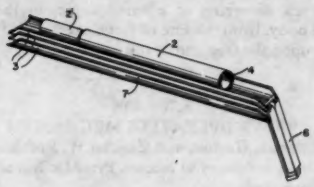
3,706,435

STAND FOR AN ARTIFICIAL TREE OR THE LIKE

Armand E. Tedeschi, Jr., New York, N.Y., assignor to Mr. Christmas Incorporated, New York, N.Y.

Filed April 6, 1971, Ser. No. 131,724
Int. Cl. A47g 33/12
U.S. Cl. 248—48 4 Claims

A stand arrangement for an artificial tree or the like including a vertically extending coupler having an opening at one end for detachably securing a plurality of leg members together in assembly. The leg members each have a flange portion each extending into the coupler opening, a foot portion resting on a surface such as a floor and an integral portion extending between the flange and foot portions to provide a self-supporting and self-stabilizing tripod arrangement.

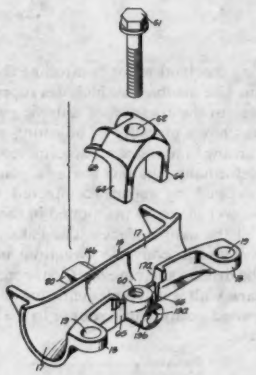


3,706,436

CONDUCTOR CLAMP WITH MEANS FOR ANCHORING A CONDUCTOR STRINGING ASSEMBLY THERETO

L. E. Lindsey, 222 Vista, Pasadena, Calif.

Division of Ser. No. 845,960, July 30, 1969, Pat. No. 3,640,504. This application June 23, 1971, Ser. No. 155,757
Int. Cl. F16l 3/00; H02g 7/00
U.S. Cl. 248—63 5 Claims



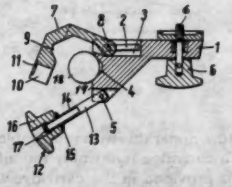
A conductor clamp for pivoting support on the outer end of a power line insulator and including means for anchoring a conductor stringing assembly aligned with the clamp seating channel until the conductor has been seated in the clamp.

3,706,437

CLAMP FOR OPTICAL INSTRUMENTS AND THE LIKE

Toni Eberhardt, Bad Kreuznach, Rhineland, Germany, assignor to Jos. Schneider & Co. Optische Werke, Kreuznach, Rhineland, Germany

Filed Nov. 30, 1970, Ser. No. 93,648
Claims priority, application Germany, Dec. 2, 1969, P 19 60 305.5
Int. Cl. F16b 2/10
U.S. Cl. 248—230 7 Claims



A clamp for fastening an object to a supporting bar has a body forming a first clamp jaw and carries a swingable arm

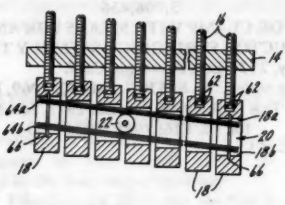
forming a confronting second clamp jaw; the free end of the arm is bifurcated and engageable by a thumb nut on a bolt also articulated to the body. The pivot of the arm is slidable in an inclined track diverging at a small angle, in the direction toward the body, from the line of force exerted by the engaged thumb nut upon the free end of the arm.

3,706,438

VALVE OPERATING MECHANISM

James A. Condon, Gaston, and Charles W. Rothhaar, Muncie, both of Ind., assignors to Maxon Pro-Mix Burner Corporation, Muncie, Ind.

Filed Jan. 13, 1971, Ser. No. 106,114
Int. Cl. F16k *31/52*
U.S. Cl. 251—251 **14 Claims**



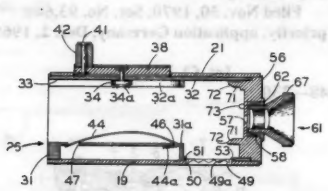
An operating mechanism for controlling the movement of a valve element. The mechanism includes support means movable in response to the rotation of a driving shaft means. The support means has a plurality of adjusting means connected thereto and arranged along a predetermined path thereon. A continuous deformable channel having a pair of opposed cam surfaces is defined by means connected to the adjusting means. A follower means is positioned in the channel so as to follow each of the cam surfaces. The cam surfaces translate the follower means in converse directions in response to the rotation of the driving shaft means. Connecting means join the follower means with a valve element that moves between an open and a closed position in response to the translation of the follower means.

3,706,439

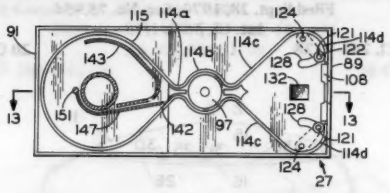
MOTION PICTURE VIEWER WITH REMOVABLE CARTRIDGE

James R. Skinner, Cupertino; Mark O. Ultz, Mountain View, and Paul W. Hait, Saratoga, all of Calif., assignors to Action Film, Inc., Mountain View, Calif.

Filed Oct. 17, 1969, Ser. No. 867,289
Int. Cl. G03b *23/04*, *1/16*
U.S. Cl. 352—78 **14 Claims**



Motion picture apparatus with removable cartridge having a housing with a cartridge removably mounted in the housing. An aperture is provided in the cartridge. A length of film is disposed within the cartridge and means is provided for advancing the length of film frame by frame past the aperture. Means is mounted in the cartridge and exposed to ambient light for supplying light to the film on the side of the film opposite the aperture. An optical assembly is mounted on the housing in front of the aperture for forming an image of the film as it is advanced in the cartridge.

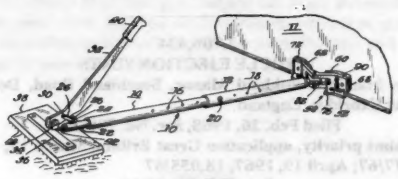


3,706,440

TAIL BLOCK FOR CARPET STRETCHING TOOL

Howard C. Ross, Chicago, Ill., assignor to Kinkead Industries, Inc., Chicago, Ill.

Filed Oct. 19, 1970, Ser. No. 81,818
Int. Cl. A47g *47/04*
U.S. Cl. 254—62 **11 Claims**



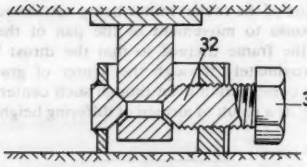
A carpet stretching tool with a tail block constructed to permit abutment against the intersection of two projecting vertical wall surfaces, as well as abutment against flat wall surfaces. The improved tail block of the carpet stretching tool is adapted to engage two vertically extending surfaces angularly disposed adjacent each other, as well as a single vertical surface.

3,706,441

JACKING DEVICES

Dudley Norman Forbes, 268 Pastuer Road, Blackheath Ext. 1, Johannesburg, Republic of South Africa

Filed May 24, 1971, Ser. No. 146,104
Claims priority, application Republic of South Africa, May 22, 1970, 70/3468
Int. Cl. B66f *3/08*
U.S. Cl. 254—98 **11 Claims**



This invention deals with a jack which can be incorporated in the length of a pit prop, can be used as a flat jack or can be used as a pulling jack. Essentially the jack is composed of a plunger held in a stirrup by a conical anvil and a pointed screw engaging in opposed conical recesses in the plunger. By turning the screw the stirrup is caused to move transversely to the plunger axis and at the same time the plunger moves up and down in the stirrup. If used as part of a pit prop, the plunger forms telescopic extension of the prop and the stirrup rests on

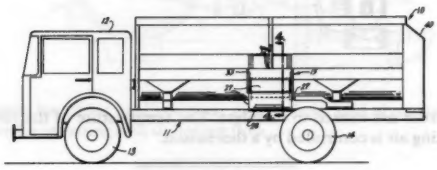
an end of the prop. Acting as a jack the top of the plunger acts on one surface and the stirrup on another. For pulling purposes the plunger is attached to the element to be pulled. The device of the invention generates large forces, but is only suitable for small displacements.

3,706,442

MOBILE FEED MIXER AND BUNK LOADER

Robert W. Peat, Garden City, Kans., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed March 25, 1971, Ser. No. 127,878
Int. Cl. B01f 7/08, 15/02
U.S. Cl. 259—41 1 Claim



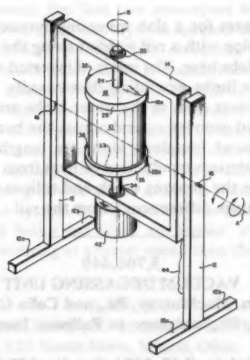
A truck having a mixing box with internal augers which move material along the bottom of the box from the ends toward the midpoint along the bottom, upwardly and then back toward the ends. A lateral discharge conveyor is located at the midpoint to deliver material to one side. The discharge is located near the rear wheels of the truck.

3,706,443

AGITATION METHOD AND MEANS

Charles J. Oberhauser, Watertown, Mass., assignor to Dynatech Corporation, Cambridge, Mass.

Filed Aug. 19, 1970, Ser. No. 65,241
Int. Cl. B01f 9/00, 11/00
U.S. Cl. 259—72 14 Claims



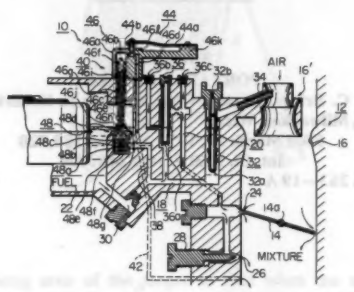
A liquid in a container is agitated by rapidly rotating the container about an axis thereof while, at the same time, allowing the container to rock about a second axis, preferably perpendicular to the first.

3,706,444

CARBURETTOR FOR MOTOR VEHICLE

Kenji Masaki, Yokosuka, and Sinzo Kato, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sept. 3, 1970, Ser. No. 69,396
Claims priority, application Japan, Sept. 9, 1969, 44/71376; Sept. 9, 1969, 44/71377; Oct. 3, 1969, 44/79012
Int. Cl. F02m 1/10
U.S. Cl. 261—39 D 2 Claims



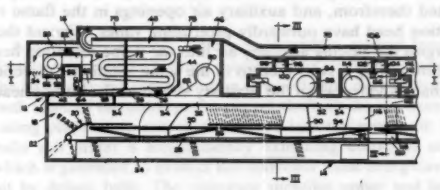
A mixture supply control system for an internal combustion engine of a motor vehicle, comprising an auxiliary fuel passage for providing communication between the fuel reservoir and the main mixture passage so as to supply additional fuel to the main mixture passage, valve means for opening and closing the auxiliary fuel passage in response to the temperature of the engine, an auxiliary air passage for providing communication between the valve means and a portion posterior to the throttle valve so as to supply additional air to the intake manifold, and temperature sensing means for controlling the opening and closing operations of the valve means in response to the temperature of the engine. The mixture supply control system supplies to the engine an appropriate amount of enriched mixture for the initial "cold-engine" and subsequent warming-up operations.

3,706,445

FUME INCINERATOR

Charles B. Gentry, Grand Rapids, Mich., assignor to Granco Equipment, Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 59,142, July 29, 1970, abandoned, and a continuation-in-part of Ser. No. 104,905, Jan. 8, 1971, abandoned. This application Sept. 30, 1971, Ser. No. 185,046
Int. Cl. F27b 9/30; F23q 7/06
U.S. Cl. 263—8 R 26 Claims



An incinerator for a drying oven and the like to remove combustible fumes such as solvent vapors from the exhaust from such ovens. The incinerator is formed from a narrow, elongated, heat-conducting, metal incinerator conduit having at least one U or reverse bend to increase turbulence within the conduit and to increase heat exchange of hot gases with the exterior of the conduit. The fume-laden gases to be incinerated are channelled along the exterior surface of the incinerator conduit for heat exchange with the incinerator. A

fan draws the solvent-laden gases through the larger preheat conduit and forces the preheated gases into the incinerator conduit at a higher pressure than that of the preheat conduit. In one embodiment, a portion of the combusted gases from the incinerator conduit is admixed with the solvent and air mixture in the preheat conduit to assist in preheating the mixture. The incinerator can be built into the oven with which it is used, or can be a separate entity mounted on top of the oven or even separated from the oven by ducting.

3,706,446

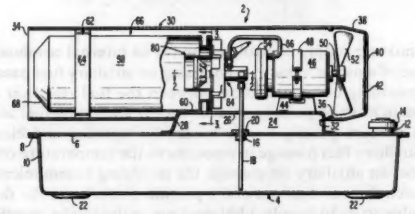
PORTABLE HEATER

Eugene C. Briggs, Dayton, Ohio, assignor to Koehring Company, Milwaukee, Wis.

Filed March 29, 1971, Ser. No. 128,720

Int. Cl. F23l 9/04; F24h 3/04

U.S. Cl. 263—19 A **6 Claims**



The elongated generally tubular shell of an oil burning portable heater is provided with a coaxial combustion chamber at its front end portion. A motor within a rear end portion of the shell drives both a primary combustion air pump and a fan for drawing air into the rear end of the shell and forcing it longitudinally through the shell. A burner tube extends a short distance into the rear end of the combustion chamber and a burner head is mounted at the rear end of the burner tube. A fuel nozzle in the burner head is supplied with oil and primary air and projects an air-oil mixture axially of the burner tube. Auxiliary air from the fan enters openings in the circumference of the burner head and exits into the burner tube in a swirling pattern. An open ended conical flame retention head is located within the burner tube with the small end of the cone facing the nozzle to receive the air-oil mixture projected therefrom, and auxiliary air openings in the flame retention head have outwardly protruding vanes adjacent their margins for guiding auxiliary air into the flame retention head and imparting a swirl thereto in the same rotational direction as that provided when the auxiliary air enters the burner head.

3,706,447

HEAT TREATMENT APPARATUS FOR THE TREATMENT OF SEWAGE AND OTHER SLUDGES

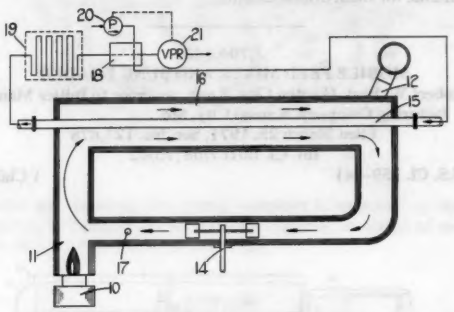
Kenneth George Mulhall, 2 Deer Barn Hill, Redditch, England

Filed Dec. 31, 1970, Ser. No. 103,123

Int. Cl. F27b 5/02

U.S. Cl. 263—37 **6 Claims**

A sludge heat treatment apparatus is provided in which heating of the incoming raw sludge is effected by passing the sludge through a sludge conduit extending along a duct through which hot air and combustion products of a fluid fuel



burner are caused to circulate. The temperature of the circulating air is controlled by a thermostat.

3,706,448

SKIDS OR BEAMS FOR FURNACES

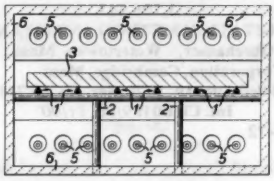
Frank Michael Salter, Kent, and John Edwin Dibley, Surrey, both of England, assignors to The British Iron and Steel Research Association, London, England

Filed Jan. 21, 1971, Ser. No. 108,407

Claims priority, application Great Britain, March 23, 1970, 13,923/70

Int. Cl. F27b 5/00

U.S. Cl. 266—1 R **11 Claims**



A skid or beam for a slab reheating furnace has a hollow water cooled pipe with a rail welded along the top of the pipe on which the slabs bear. The rail is of inverted channel section with two outer limbs extending downwardly from an upper portion. The lower ends of the outer limbs are welded to the pipe. Preformed grooves extend across the bearing surface of the rail at spaced locations along its length. The channel shaped rail minimizes conduction of heat from the slabs to the pipe and in use the grooves crack and relieve stresses caused by the temperature differences across the rail.

3,706,449

VACUUM DEGASSING UNIT

C. H. Anderson, MacMurray, Pa., and Colin Griffiths, Arlington Heights, Ill., assignors to Pullman Incorporated, Pittsburgh, Pa.

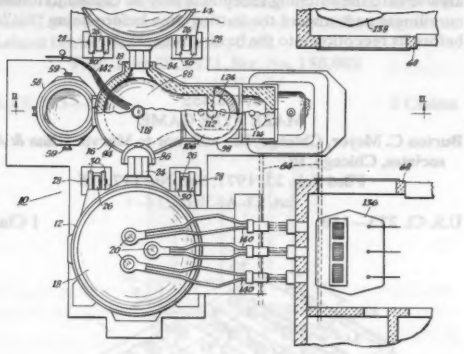
Filed April 27, 1971, Ser. No. 137,797

Int. Cl. C21c 7/10

U.S. Cl. 266—34 V **14 Claims**

A vacuum degassing unit comprising a reservoir vessel, a pivot structure for mounting said vessel, a degassing vessel having a pair of siphon legs extending into said reservoir vessel, means for maintaining a liquid contained within said reser-

voir vessel at differential levels respectively relative to said siphon legs to maintain a siphoning flow therethrough, and

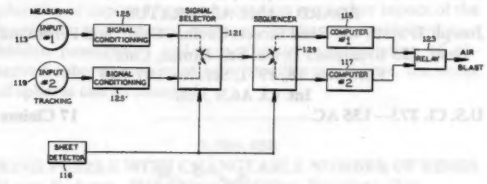


means for tilting said reservoir vessel about said pivot structure for initiating said siphoning flow.

3,706,450
FOLDING APPARATUS

Roland W. Gerstenberger, and David P. Gunn, both of Fort Lauderdale, Fla., assignors to Jensen Machinery Inc., Fort Lauderdale, Fla.

Filed Oct. 20, 1970, Ser. No. 82,429
Int. Cl. B65h *45/18, 45/12*
U.S. Cl. 270—84 **7 Claims**



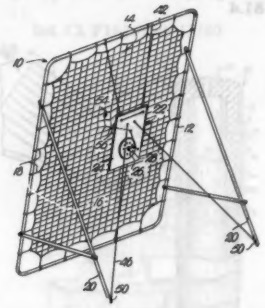
In the folding apparatus, conveyors are arranged in vertically stacked relation and run in different directions to save space. A roll folder mechanism which is actuated by an air jet is located between the first two conveyors which run in the same direction. A third conveyor is located under the second conveyor ad runs in the opposite direction. A pick-up-and-drop type of folder mechanism is associated with the second conveyor, and another roll type folder with air jet is associated with the third conveyor. A fourth conveyor receives pieces from the third conveyor and runs transversely relative to the same. Final folds are made on this fourth conveyor by pick-up-and-drop type folding mechanisms. The article is measured by an electric pulsing device as the article is being fed in from an ironer, and the system has the ability to measure an article while it is still being fed from the ironer, even though the folder may be running at a faster speed than the ironer.

3,706,451
TARGET TYPE SCORING DEVICE

Jack R. Dixon, 125 North Main, Miami, Okla.

Filed Dec. 3, 1970, Ser. No. 94,764
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 A **10 Claims**

A target type scoring device which includes a target formed of resilient material such as a net supported by elastic members and a frame, there being a plate positioned in spaced relationship behind the target and having indicia thereon to define a scoring area on the target, there being a rotatable member carried by the plate and having markings to indicate a score as a result of the scoring area of the target being struck by an object, there being means coupling the rotatable member with

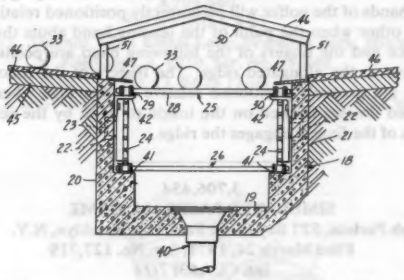


the scoring area of the target so that when the target of resilient material rebounds as a result of being struck by an object the means is actuated to rotate the rotatable member and thus indicate a score.

3,706,452
GOLF DRIVING RANGE CONSTRUCTION

Ronald W. Soucie, 940 Meadowsweet Drive, Corte Madera, Calif.

Filed Sept. 11, 1970, Ser. No. 71,303
Int. Cl. A63b *67/02, 69/36*
U.S. Cl. 273—35 R **5 Claims**



A golf driving range constructed with a central longitudinally extending ball return conveyor and with the contour of the ball receiving range slanting upwardly and outwardly from both sides of the conveyor to permit the balls driven from the teeing platform to automatically roll into the conveyor. The balls roll under a longitudinally extending conveyor cover which is provided to protect the conveyor from being directly hit by driven balls. The conveyor includes upper and lower runs and shafts which extends between pairs of opposed chains and support the golf balls as they are carried back to the teeing platform. The conveyor carries the balls into a hopper or other suitable receptacle positioned in the club house from which point the balls may be dispensed to the users. The range may preferably be constructed by excavation and building up of the terrain at the site and is provided with a permanent coating of relatively hard material covered with a simulated turf or carpeting to provide a surface which requires no care or upkeep.

3,706,453

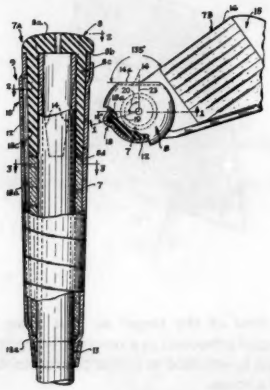
GOLF CLUB WITH FINGER ORIENTING GRIP

Nate Rosasco, Jr., Chicago, Ill., assignor to Northwestern Golf Company, Chicago, Ill.

Continuation of Ser. No. 730,977, May 6, 1968, abandoned. This application Nov. 2, 1970, Ser. No. 86,307

Int. Cl. A63b 53/14

U.S. Cl. 273—81.4 **1 Claim**



A golf club in which a grip having a flat portion for the palm of one of the golfer's hand is combined with a finger positioning means for the fingers of the other hand so the two hands are desirably oriented relative to each other and to the clubhead of the club. The finger positioning means is an elongated ridge which has a longitudinal axis generally following the longitudinal axis of the tubular shaft. The ridge is located on the tubular shaft about 105° as measured between the axes perpendicular to the flat portion of the grip and the ridge. The same relationship of the flat surface to the ridge is provided for the various clubs with different clubheads of varying pitch. The hands of the golfer will be correctly positioned relative to each other when the palm of the leading hand abuts the flat surface and the fingers of the following hand are positioned relative to the elongated ridge. The fingers of the following hand are properly positioned relative to the ridge when the aligned creases formed on the inside of hand by the second joints of the fingers engages the ridge.

3,706,454

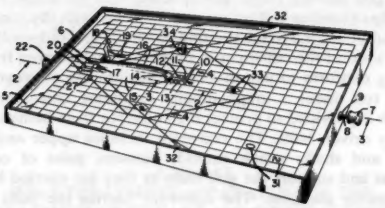
SIMULATED BASEBALL GAME

Joseph Parlato, 527 Bay Ridge Parkway, Brooklyn, N.Y.

Filed March 24, 1971, Ser. No. 127,719

Int. Cl. A63f 7/14

U.S. Cl. 273—89 **3 Claims**



This invention is directed to a baseball game played on a game board constructed to provide, in addition to the usual field area, a pitching and a batting area each having its own independently operable pitching or batting device. A relatively wide three-part catching receptacle is formed in the batting area and a relatively wide pitching guide channel of trough-like cross-section extends between the pitching area and the catching receptacle so that a ball impelled from the pitching area toward the catching receptacle may be caused to follow a curvilinear path toward the batting area before being "hit" or before its reception into the batting receptacle.

3,706,455

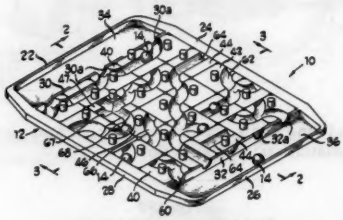
MAZE TYPE GAME

Burton C. Meyer, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 22, 1971, Ser. No. 117,515

Int. Cl. A63b 67/14

U.S. Cl. 273—110 **1 Claim**



A maze-type game on a tiltable game board including rollable playing pieces and playing piece receiving areas at the opposite ends of the game board, characterized by a maze-like path of travel between the playing piece receiving areas with portions of the maze-like path of travel being individually movable during the course of the play of the game.

3,706,456

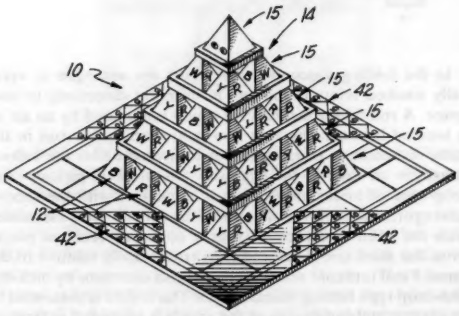
BOARD GAME APPARATUS

Joseph J. Sesti, 427 Reed Street, Covina, Calif., and Ferdinand Sesti, 223 Braziliana Drive, San Dimas, Calif

Filed Jan. 18, 1971, Ser. No. 107,145

Int. Cl. A63f 3/00

U.S. Cl. 273—135 AC **17 Claims**



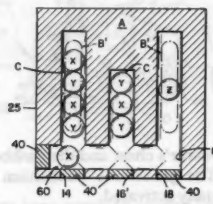
Game apparatus including a number of similar game blocks having faces marked with distinctive colors, and adapted to be placed side by side to form a block structure, and a set of indicia selector cards composed of card groups equal in number and corresponding in color to the block faces. Each card bears a pair of block placement indicia matching the indicia on two selected block faces. The apparatus has pyramidal shaped blocks which are assembled in a number of tiers or plateaus to form a completed block structure with the shape of a pyramid. This apparatus has plateau boards for supporting each block plateau on the preceding plateau, scoring charts on the lowermost or base plateau board, a chance selection hood block adapted to be placed over and rotated with a game block, and a bonus scoring feature.

3,706,457

GAME HAVING CAPTURED MARBLE EXPOSED FOR DIGITAL MANIPULATION

Michael Gonzales, Sebastopol; Richard H. Benton, and William G. Moore, both of Mill Valley, all of Calif., assignors to Leland Dibble, Jr., Santa Rosa, Calif.

Filed June 29, 1971, Ser. No. 158,002
Int. Cl. A63f 7/04
U.S. Cl. 273—1534 2 Claims



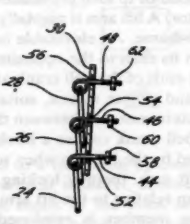
A plurality of side by side cylindrical bores are each drilled from a vertical edge of a block with one edge of each bore adjacent a planar and major surface of the block. At least some of the bores are partially exposed to the surface of the block by routing out a channel to expose less than a diameter of the cylindrical bore through the major surface to the exterior of the block. Spheres having a diameter less than that of the bore, but greater than that of the channel, are inserted interior of the bore. The bore is plugged at its end to trap the spheres. The spheres are thus held within the bore and yet exposed to external view and digital manipulation through the routed channel. According to one aspect of this invention, transverse ridges and valleys interior of the bore can be used to hold the spheres in preselected positions for marking turns in the game relating to sequential movement of a plurality of spheres in a plurality of exposed bores. According to another aspect of the invention, two exposed passages can be communicated to a hidden passageway and trap; through manipulation of observed spheres each marked with different indicia, the order of spheres can be changed.

3,706,458

RING PUZZLE WITH CHANGEABLE NUMBER OF RINGS

Henry F. Jones, 2918 Orleander Drive, Pasadena, Tex.

Filed July 22, 1971, Ser. No. 165,155
Int. Cl. A63f 9/08
U.S. Cl. 273—158 2 Claims



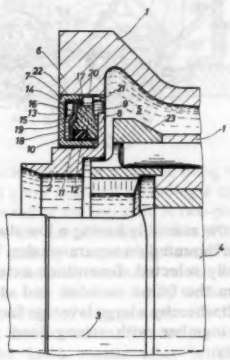
A puzzle having a plurality of identical rings each of which is connected to a base by a support which is rotatably and longitudinally movable in the base with the support for each ring except for the last ring in the series being secured to the base through the inside of the next adjacent ring and an engaging member having two sides generally parallel and spaced a distance apart less than the inside diameter of the ring and joined together at least at one end whereby manipulation of the rings and engaging member can be performed to insert the engaging members through all of the rings and removed therefrom. The supports are individually releasably connected to the base so that the number of rings, and hence the difficulty of the puzzle, may be changed at will.

3,706,459

OIL SEAL FOR ROTARY PISTON MACHINES

Manfred Frenzel, and Karl Vom Stein, both of Burscheid, Germany, assignors to Goetzewerke Friedrich Goetze A.G., Burscheid, Germany

Filed Dec. 30, 1970, Ser. No. 102,605
Claims priority, application Germany, April 29, 1970, G 70 16 069.9
Int. Cl. F16j 9/00, 15/40
U.S. Cl. 277—40 10 Claims



A sliding ring oil seal has its sliding ring held by a support ring. Lugs protrude radially from the support ring to interfere with the seal housing and prevent relative rotation between the sliding ring and the seal housing.

3,706,460

SHOPPING CART

James L. Thomas, 6201 Bethia Lane, Brooklyn Park, Minn.

Filed Sept. 4, 1970, Ser. No. 69,840
Int. Cl. B62b 11/00
U.S. Cl. 280—33.99 F 2 Claims

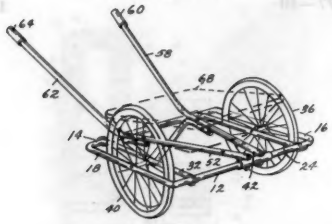
An expandable shopping cart having an extension basket movable from a retracted position for storage, to an extended position for use. The extension basket increases the volumetric capacity of the conventional shopping cart by providing an additional separate compartment when extended. When retracted the shopping cart is nestable with similar carts for storage in the conventional manner. The extension basket may be mounted on conventional nonexpandable shopping carts without redesign or change in the construction of the conventional cart.

3,706,461

WHEELBARROW ASSEMBLY

Paris E. Devol, 122 Cardinal Lane, Tabbs, Va.

Filed Feb. 12, 1971, Ser. No. 114,840
Int. Cl. B62b *1/10*
U.S. Cl. 280—47.26 **7 Claims**



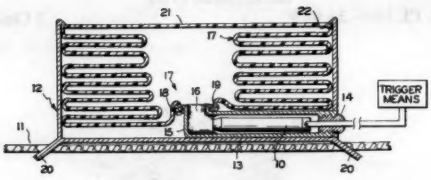
A wheelbarrow assembly having a low slung frame member and two wheels mounted on separate axles. Two handle members of carefully selected dimensions extend upwardly and outwardly from the frame member and at a predetermined angle therewith whereby a large leverage factor is provided for the operator together with strong load support for easy maneuverability.

3,706,462

INFLATABLE SAFETY DEVICE

Wallace B. Lilly, 202 College Ave., Beckley, W. Va.

Filed May 28, 1970, Ser. No. 41,282
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **2 Claims**



An inflatable bag for protecting the occupant of a car from injury as a result of a collision. The bag is securely connected to the occupant's seat belt. The bag normally is deflated and is releasably confined so that upon inflation the bag is quickly released and, by reason of its being mounted on the seat belt, assumes a position in front of the occupant using the seat belt.

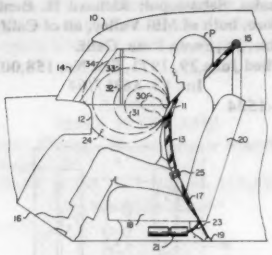
3,706,463

INFLATABLE SAFETY BALLOON WITH INERTIAL MEANS OF ACTUATION

Martin Lipkin, 445 East 86th Street, New York, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,270
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **25 Claims**

An inflatable safety balloon made of a flexible material is folded and mounted within a compartment on an elastic attachment cord which is mounted inside of a car in a manner resembling a shoulder harness so as to position the compartment in front of a wearer's chest. A gas release mechanism and a source of pressurized gas which inflates the balloon in an



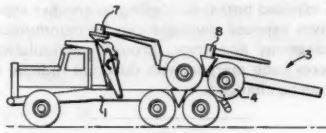
area between a wearer's chest and the dashboard or front seat when activated. The gas release mechanism may be inertially activated or manually activated.

3,706,464

POWER SYSTEM FOR LOADING AN EMPTY TRAILER ONTO A TRACTOR OR FOR LOADING PRE-LOADED TRAILERS ONTO A FIFTH WHEEL OF THE TRACTOR

Clifford G. Burrows, North Vancouver, British Columbia; John E. Magnuson, Surrey, British Columbia, and Ludi Giese, North Vancouver, British Columbia, all of Canada, assignors to Canadian Kenworth Ltd., Burnaby, Canada

Filed Dec. 13, 1970, Ser. No. 100,957
Int. Cl. B62d *53/00*
U.S. Cl. 280—401 **11 Claims**



A tractor-semi-trailer combination is disclosed, the tractor having power means on the tractor for loading the trailer onto the rear frame of the tractor when the trailer is to be transferred without a load or to load pre-loaded trailers onto a fifth wheel of the tractor. A lift arm is pivotally attached at one end to the tractor sub-frame. An elevatable bell crank is pivotally attached between its ends to the opposite end of the lift arm. To the respective ends of the bell crank are pivotally attached the fifth wheel and power means, suitably a double-acting power cylinder interconnected between the tractor frame and bell crank. The bell crank carries a hook member which engages a pin carried by the lift arm when rotated about its connection to the lift arm, thereby locking the bell crank in a releasable position relative to the lift arm and raising the fifth wheel. A locking member is employed to hold the hook member in engagement with the pin carried by the lift arm. The power means, when actuated, raises the lift arm, bell crank and fifth wheel forward and upward over the rear frame of the tractor, thereby drawing the coupled empty trailer onto the tractor with the trailer wheels supported on the rear frame portion of the tractor.

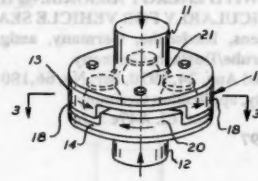
Loaded semi-trailers with their forward bunk supported on retractable legs are loaded onto the fifth wheel of the tractor by positioning the fifth wheel of the tractor under the trailer reach, raising the fifth wheel by actuation of the power means to engage the trailer kingpin, raising the fifth wheel and bunk sufficiently for the legs of the trailer to clear the ground, retracting the legs, and lowering the fifth wheel to its lowered or "ground" position.

3,706,465

ELASTOMERIC REFLEX JOINT

Edward J. Olowinski, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Sept. 30, 1971, Ser. No. 185,019
Int. Cl. F16b 7/00; A61f 1/04
U.S. Cl. 287—85 R 10 Claims



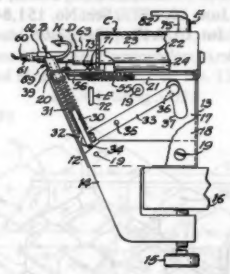
Spaced members have opposed spaced apart load-carrying surfaces. A plurality of elongate elastomeric bodies are symmetrically disposed between the surfaces in spaced apart relation about a pivot axis in axial compression load-carrying relation. Vane means carried by the spaced members are resiliently maintained or biased in engaging relation with the periphery of the elastomeric bodies. Upon axial compression of the elastomeric bodies, their circumference expands. The vane means are responsive to this circumferential expansion for causing relative rotation between the spaced members about the pivot axis.

3,706,466

SNELL-TYING IMPLEMENT

Delphin H. Landry, 55 Cerro Vista, Hacienda del Pismo, and Howard A. Biby, 54 Cerro Vista, Hacienda del Pismo, both of, Pismo Beach, Calif.

Filed Nov. 29, 1971, Ser. No. 202,851
Int. Cl. D03j 3/00
U.S. Cl. 289—17 7 Claims



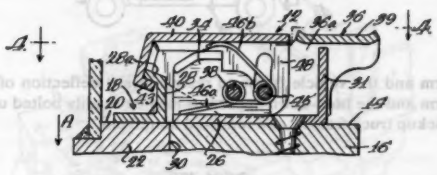
A snell is attached to a fish hook by coiling it around the projecting end of a tubular mandrel, around a stretch of the snell and around the shank of the hook held alongside the mandrel, then catching it in a hook on the end of a pulling needle extending through the mandrel and projecting from the end thereof, then retracting the needle and mandrel into a fixed bearing sleeve so as to draw a loop of the snell through the coils while pushing the coils off the mandrel onto the hook shank and the several stretches of the snell passing through the coils, and finally pulling the two ends of the snell, projecting from the opposite ends of the body of coils, to tighten the coils in secure attachment to the hook. The needle and mandrel are yieldingly retractable during this operation. For tying a loop on the opposite end of the snell, a lock is provided to hold the mandrel in its projected position, and the needle is operated to draw a loop of the snell through a doubled end portion thereof which has been coiled around the projecting end of the mandrel, while the latter remains fixed by its lock.

3,706,467

CHECK RAIL LOCK

Jerry L. Martin, Echo Heights, Owatonna, Minn., assignor to Truth Incorporated

Continuation of Ser. No. 789,556, Jan. 7, 1969, abandoned.
This application March 12, 1971, Ser. No. 123,879
Int. Cl. E05c 5/00, 9/14
U.S. Cl. 292—111 10 Claims



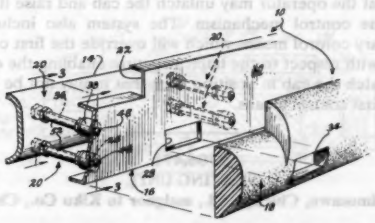
A check rail window lock for a double hung window having a bottom sash and a top sash and including a catch means affixed to the bottom rail of the top sash. A two-part latch means selectively engages the catch means and is affixed to the top rail of the bottom sash by a mounting base. The latch means includes a first part movably mounted on the base for pivotal movement about an axis fixed vertically to the base to rotate the first part into and out of engagement with the catch means and for generally horizontal movement to draw the catch means toward the latch means after initial engagement therebetween. A second part of the latch means is pivotally mounted on the base and is operatively connected to the first part to permit said rotatable movement and to positively move the first part horizontally to lock and unlock the sashes.

3,706,468

VEHICLE BUMPER

Salvatore J. Yoviene, 79 McClellan Circle, Buffalo, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,004
Int. Cl. B60r 19/08
U.S. Cl. 293—88 1 Claim



A vehicle bumper including a relatively rigid plate member, an impact energy absorbing body portion adhesively fixed to and sized to extend substantially coextensive with the plate member, and a plurality of impact energy absorbing-mounting devices for fixing the plate member to the vehicle.

3,706,469

FRAME MOUNTED CAMPER HOLD-DOWN

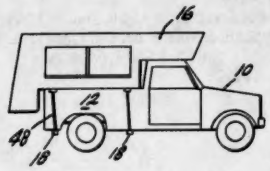
Frederick M. Covert, 9115 Jackson Road, Dexter, Mich.

Filed July 21, 1971, Ser. No. 164,646
Int. Cl. B60p 3/32
U.S. Cl. 296—23 MC 8 Claims

A hold-down device for maintaining recreational vehicle campers upon the bed of a pickup truck wherein the hold-down is mounted directly and solely to the main vehicle frame.

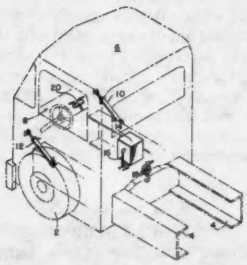
The apparatus of the invention includes an elongated arm having an inner end bolted to the truck frame, and outer end

attached by means of flexible tension means to the camper enclosure. Bracing means is interposed between the ends of the



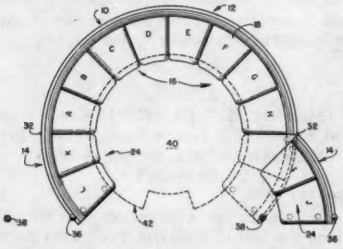
arm and the vehicle frame to resist upward deflection of the arm and the hold-down apparatus may be readily bolted upon pickup truck frames, and removed therefrom.

3,706,470
CAB TILT HYDRAULIC CIRCUIT
Robert E. Johnson, Kent, Wash., assignor to Pacific Car and Foundry Company, Bellevue, Wash.
Filed July 23, 1970, Ser. No. 57,503
Int. Cl. B62d *33/06*
U.S. Cl. 296—28 C **6 Claims**



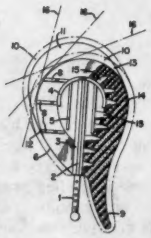
A control system for use with a truck having a tilt type cab wherein the cab is tilted by means of hydraulic pressure. The system includes a hydraulically operated latch mechanism such that the operator may unlatch the cab and raise it using the same control mechanism. The system also includes a secondary control means which will override the first control means with respect to the latch structure enabling the operator to latch the cab in position such that it may not be raised by the first control means.

3,706,471
SEATING UNIT
Ron Shimosawa, Chicago, Ill., assignor to Kiku Co., Chicago, Ill.
Filed Oct. 22, 1970, Ser. No. 83,116
Int. Cl. A47b *39/00*
U.S. Cl. 297—158 **6 Claims**



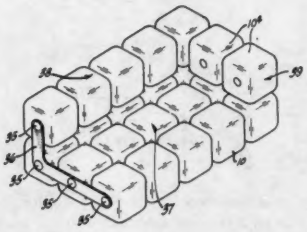
A seating unit comprising a fixed seating section and one or more end seating sections at one end or at the opposite end of the fixed seating section, which end sections are pivotally secured to the fixed seating section so that they may be moved or pivoted outwardly in relation to the fixed seating section to permit persons to move or slide into the fixed seating section without discomfort or inconveniencing the others seated.

3,706,472
HEAD REST WITH ENERGY ABSORBING HEAD PAD, PARTICULARLY FOR VEHICLE SEATS
Wolfgang Mertens, Karlsruhe, Germany, assignor to Kurt Herzer, Karlsruhe/Durlach, Germany
Filed Aug. 24, 1970, Ser. No. 66,180
Claims priority, application Germany,
Int. Cl. A47c *7/38*
U.S. Cl. 297—397 **9 Claims**



A head rest for a vehicle seat comprising a rigid frame structure supporting a deformable ribbed or finned structure of sheet material or molded from hard foam and having a thin covering padding of upholstery.

3,706,473
STRUCTURAL MODULE AND FURNITURE OR OTHER STRUCTURES FORMED THEREFROM
John W. Mullen, 5365 Montrose Street, Dallas, Tex.
Filed June 10, 1971, Ser. No. 151,841
Int. Cl. A47c *7/02, 27/08*
U.S. Cl. 297—456 **19 Claims**



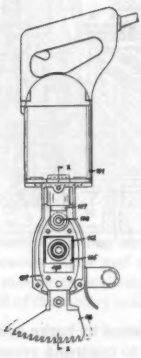
A structural module and furniture constructed using the same, wherein preformed blocks of resilient or elastomeric material, preferably having rounded edges, with openings for connecting the blocks to others into structural assemblies are utilized to form seating or reclining furniture structures. The blocks are also preferably formed with a smooth exterior skin or a plastic film coating which may be applied by immersion or by spraying. Rods or flexible members may be used to join the blocks. The blocks may be formed as cubes with the openings disposed along one axis, two axes or three axes passing through substantially the center of the cube, or may be blocks elongated along one or two axes, with suitable openings formed therein.

3,706,474

MOTOR-DRIVEN CHISELING DEVICE

Henry Neuenburg, Ahornstrasse 22, 43 Essen-Stadtwald, Germany

Filed June 4, 1971, Ser. No. 149,953
Claims priority, application Germany, June 11, 1970, P 20 28 754.1; April 24, 1971, P 21 20 077.1
Int. Cl. E21c *37/24*
U.S. Cl. 299—38 1 Claim



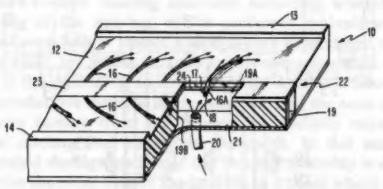
A motor-driven chiseling device for making cuts and grooves in rocks and the like by means of a tool with teeth, which comprises transmission means operable to transform the rotary movement of a drive motor for driving the chiseling device into an oscillating movement of said tool in a plane extending through the longitudinal axis of said tool, said device also including a beating mechanism operable to exert upon the tool a plurality of beats during the oscillating movement of said tool.

3,706,475

AIR SLIDES

Carl Yakubowski, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed March 29, 1971, Ser. No. 128,777
Int. Cl. B65g *53/30*
U.S. Cl. 302—31 14 Claims



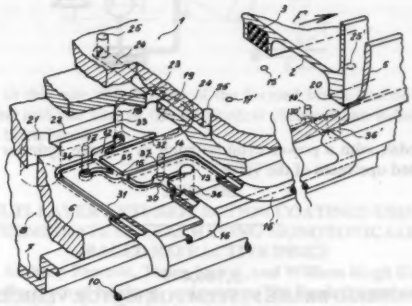
An air slide for imparting both lift and direction to a semiconductor wafer, the air slide comprising a guide plane having a plurality of arcuate recesses in the surface thereof, the recesses having side and bottom walls with the bottom wall of each of the recesses having an upward slope which merges into the surface of the guide plane substantially in the direction of intended motion of the semiconductor wafer. In the embodiment shown, a longitudinally extending plenum chamber may be connected so as to underlie the track or be positioned at opposite lateral edges of the track, the edge connection of the plenum chambers enhancing the ability for close spacing and thus tiering of the guide planes. Additionally, disclosed are two basic track structures which permit of alternate air supply sources, such as a fan or high pressure air.

3,706,476

TRANSPORT SYSTEMS UTILIZING A TRACK SUPPLIED WITH FLUID UNDER PRESSURE

Jean Charles Marie Thomas-Collignon, Chesnay, France, assignor to Bertin & Cie, Plaisir, France

Filed March 1, 1971, Ser. No. 119,727
Claims priority, application France, Feb. 27, 1970, 7007206
Int. Cl. B65g *53/04*
U.S. Cl. 302—31 12 Claims



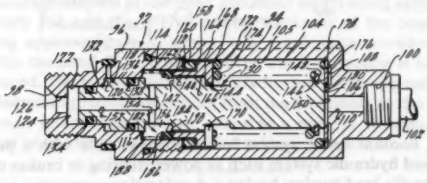
A track comprises a multiplicity of elemental nozzles controlled to discharge a layer of pressure fluid formed between the track and a load movable thereon when the presence of such load is detected, no pressure fluid being discharged in the absence of such load. This control is effected by means of a fluidic logic element responsive to a fluidic signal generated by a detector located on the track and sensitive to the presence of a load thereon.

3,706,477

PROPORTIONING DEVICE

William Stelzer, Milford, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Sept. 2, 1970, Ser. No. 68,896
Int. Cl. B60t *8/26, 11/34*
U.S. Cl. 303—6 C 14 Claims



A device for varying the proportion of brake pressure delivered to the front and rear brakes of a vehicle having a differential area piston for decreasing the proportion delivered to the rear brake after a certain inlet pressure is reached and an additional member which is movable to establish a fixed offset between the pressures delivered to the front and rear brakes after a certain differential between front and rear brake pressures is reached.

3,706,478

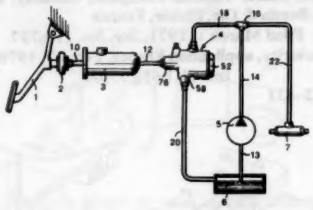
HYDRAULIC CIRCUITS

Giancarlo Michellone, Cambiano, and Mario Palazzetti, Turin, both of Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed Dec. 31, 1970, Ser. No. 103,080
Int. Cl. B60t *13/16*
U.S. Cl. 303—10 2 Claims

A hydraulic circuit suitable for a vehicle braking system is arranged so that a pump feeding the circuit is under load only

when the circuit is actuated, as by braking. The pump outlet is connected to a flow restriction valve actuated by, for instance,



a pedal, with a power cylinder such as a brake cylinder connected upstream of the valve.

3,706,479

NONSKID BRAKE SYSTEM FOR MOTOR VEHICLE WITH PRESSURIZED HYDRAULIC SYSTEM

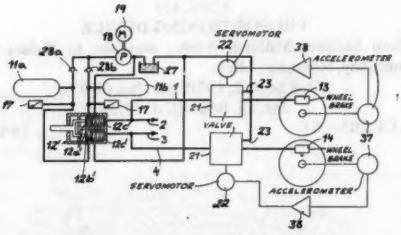
Hans-Christof Klein, Hattersheim am Main, Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Germany

Continuation of Ser. No. 37,420, May 13, 1970, abandoned. This application May 13, 1970, Ser. No. 37,420

Claims priority, application Germany, Sept. 26, 1967, T 34885

Int. Cl. B60t 8/12

U.S. Cl. 303—21 F 11 Claims



A nonskid brake system for a motor vehicle with a pressurized hydraulic system such as power steering or brakes or a hydraulic load leveler, having a deceleration-responsive valve between the brake control valve for draining pressure from the wheel brake into a reservoir. In the case in which a master cylinder is used, the valve refills the wheel brake with fluid on termination of a nonskid regulating operation by briefly connecting the wheel brake to the pressurized system.

3,706,480

BRAKE CONTROL VALVE APPARATUS

Jack Washbourn, London, England, assignor to Westinghouse Brake and Signal Company, Limited, London, England

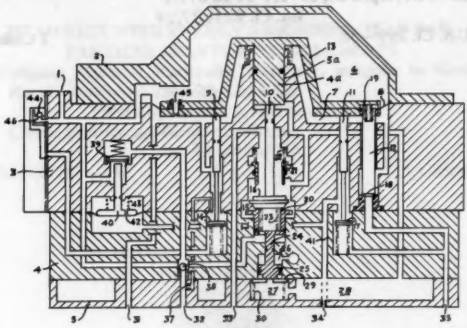
Filed Feb. 16, 1971, Ser. No. 115,651

Claims priority, application Great Britain, March 19, 1970, 13,302/70

Int. Cl. B60t 15/52

U.S. Cl. 303—36 3 Claims

An improved form of triple valve for control of fluid braking has a charged accelerated release reservoir which is connectable to the brake pipe the pressure in which is controlling the triple valve on release of the brakes to assist such release and the propagation of the release along a train having a succession of such triple valves on the same brake pipe. The accelerated release is piloted by brake cylinder exhaust pressure transients being used to control a pressure responsive device to briefly operate an accelerated release valve which connects the accelerated releaser reservoir to the brake pipe.



3,706,481

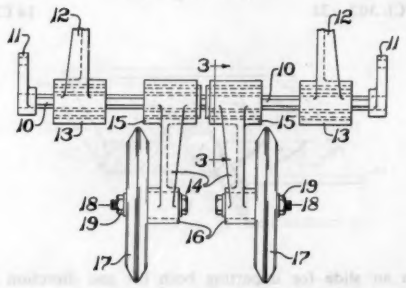
VEHICLE SUSPENSION

James H. Kramer, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed May 15, 1970, Ser. No. 37,512

Int. Cl. B62d 55/16

U.S. Cl. 305—27 2 Claims



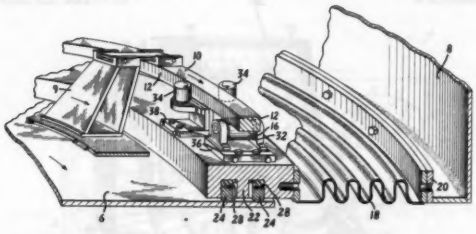
A suspension for traction belt driven vehicles in which each arm of the suspension is permitted to deflect independently of the remaining arms. Movement of the suspension arms about a common pivot shaft is resisted by elastomeric torsion springs attached to the ends of the suspension arms surrounding spaced axial portions of the pivot shaft such that the arms extend in cantilevered arrangement from the shaft. Idler pulleys are rotatably attached to the free end of each arm for contacting the running traction belt.

3,706,482

PRESSURE SEAL ASSEMBLY

Richard H. Crockett, Grand Junction, Colo., assignor to Toscotech Corporation, New York, N.Y.

Filed July 15, 1971, Ser. No. 162,997
Int. Cl. F16j 15/16
U.S. Cl. 308—1 2 Claims



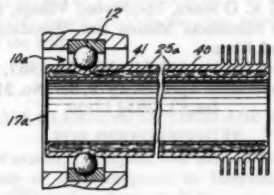
A pressure seal assembly between a rotary retort and a stationary hydrocarbonaceous vapor and spent shale accumulator is provided which maintains seal rings in alignment or engagement with the shell of the rotary retort.

3,706,483

HEAT TRANSFER BEARING MOUNTING

Arthur S. Irwin, Bemus Point, N.Y., assignor to TRW Inc., Cleveland, Ohio

Division of Ser. No. 865,605, Oct. 13, 1969, Pat. No. 3,645,593. This application Oct. 6, 1971, Ser. No. 187,196
Int. Cl. F16c 37/00
U.S. Cl. 308—77 5 Claims



An anti-friction bearing assembly mounting wherein the inner ring of the bearing, in the preferred embodiment, is mounted on a hollow sleeve which in turn is mounted on the rotating shaft, the sleeve extends axially along the shaft and is hollow in the manner of an envelope. The interior is filled with a heat conductive material such as sodium and the axial end of the sleeve remote from the bearing has radially outwardly directed cooling fins associated therewith. In this manner, heat created during rotation of the bearing assembly is drawn away from the inner ring of the bearing to a point where it can be effectively dissipated.

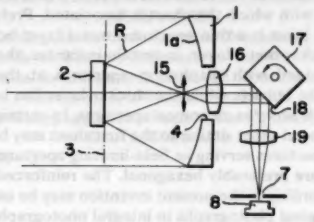
3,706,484

OPTICAL SYSTEM FOR MECHANICALLY SCANNING WITH A ROTATING POLYHEDRAL REFLECTOR

Yoshikazu Doi; Toshiro Kishikawa, and Yasumasa Sunaga, all of Ohmiya-shi, Saitama-ken, Japan, assignors to Fuji Shaskin Koki Kabushiki Kaisha, Ohmiya-shi, Japan

Filed April 23, 1970, Ser. No. 31,323
Int. Cl. G02b 27/08
U.S. Cl. 350—7 2 Claims

A method for mechanically scanning an image of a lens system by rotating a reflecting polyhedral element. A ray bundle from an object is converted into parallel light at a portion of the optical system and the polyhedral element is disposed in the path of the parallel light to reflect the parallel light thereon. The reflected light is focused by an image-forming



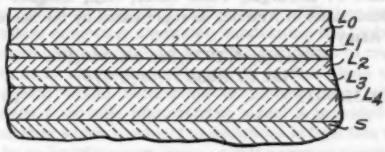
lens. In this way, the flatness of the formed image can be improved and the size of the polyhedral element can substantially be reduced.

3,706,485

MULTI-LAYER ANTI-REFLECTION COATINGS USING INTERMEDIATE LAYERS HAVING MONOTONICALLY GRADED REFRACTIVE INDEX

John Anthony Fawcett, Thrussington, and William Hugh Gray, Oadby, both of England, assignors to The Rank Organisation Limited, London, England

Filed Feb. 4, 1971, Ser. No. 112,785
Claims priority, application Great Britain, Feb. 4, 1970, 5,397/70
Int. Cl. G02b 1/10
U.S. Cl. 350—164 24 Claims



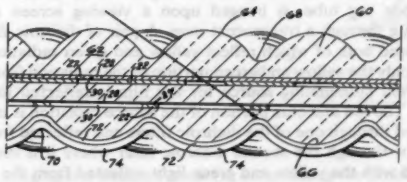
An anti-reflection multiple layer coating is formed on a transparent substrate by successive deposition of an inner layer, at least three intermediate layers and an outer layer, the optical thicknesses of the inner and outer layers being approximately λ/4 and the overall optical thickness of the coating being approximately λ, where λ is a reference wavelength within the band of wavelengths over which reflection is to be reduced. The intermediate layers are formed with progressively decreasing refractive indices from the innermost to the outermost intermediate layers, either as a number of separate layers or as a single layer of graded refractive index.

3,706,486

REINFORCED LENTICULAR SHEET WITH PLURAL APERTURED SHEETS

Roger de Montebello, 20 Chapel Street, Brookline, Mass.

Division of Ser. No. 674,556, Oct. 11, 1967, Pat. No. 3,584,369. This application Aug. 27, 1970, Ser. No. 67,636
Int. Cl. G02b 27/00
U.S. Cl. 350—167 3 Claims



A process of forming a lenticular sheet for use in integral photography having an intermediate apertured metal sheet

which acts as a reinforcing member and/or as a diaphragm and/or as a field-limiting member, the apertures being coaxial with the lenslets of the lenticular sheet in which they are embedded or with which the sheet is associated. Preferably, the diaphragm layer is a thin apertured metal layer bonded on a second thicker metal layer, in certain instances, the thin layer being provided with diaphragm apertures at the principal points of the lenslets while the thicker layer has larger apertures, which serve as clearance apertures. In certain instances a second metal sheet similar to the first sheet may be provided with the apertures serving as field-limiting apertures, in which case they are preferably hexagonal. The reinforced lenticular sheets according to the present invention may be used for taking the original photographs in integral photography, for converting the pseudoscopic image of a hologram, or of an integral photograph into an autostereoscopic integral photograph, and also in certain instances for viewing integral photographs.

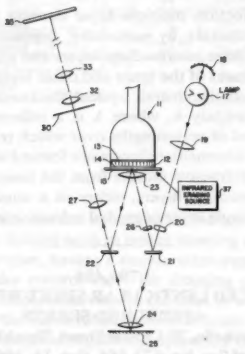
ERRATUM

For Class 352—78 see:
Patent No. 3,706,439

3,706,487
PHOTOCHROMIC PROJECTION SYSTEM

Salvatore F. LaForgia, Toms River, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed May 4, 1971, Ser. No. 140,176
Int. Cl. G03b *21/00, 21/14*
U.S. Cl. 353—11 **10 Claims**

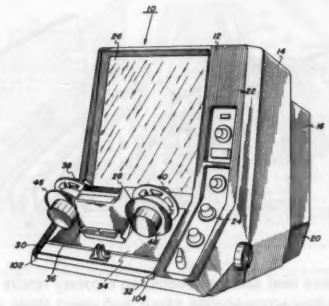


A photochromic projection system wherein indicia appearing on a cathode ray tube, and forming an opaque image on an ultraviolet-sensitive film positioned against the end face of the cathode ray tube, is imaged upon a viewing screen after passing through a transparent map. A pair of dichroic filters are used both of which reflect yellow and green radiation so that only the yellow and green portion of the radiation from an external illuminating source for the film is reflected to the film. The red and blue portion of the source radiation is transmitted through one of the dichroic filters and reflected from a mirror through the second dichroic filter where it is recombined with the yellow and green light reflected from the face of the cathode ray tube and from the second dichroic filter to provide an image in white light which then is directed through the transparent map onto the viewing screen.

3,706,488
VARIABLE FILM REEL

Joseph P. Masetta, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed May 27, 1970, Ser. No. 40,833
Int. Cl. G03b *23/00;* **B65h** *75/18*
U.S. Cl. 353—26 **14 Claims**

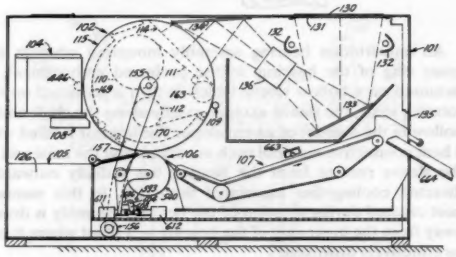


A film reel structure and support therefor characterized by the support being movable relative to a projection system with which it is associated. The reel structure is characterized by the capability of accommodating films having different widths through simple adjustment of the reel sections each having a rim or flange movable toward or away from the other rim or flange. The adjustment can be accomplished very easily and quickly without the use of tools.

3,706,489
COPYING AND DUPLICATING APPARATUS

James G. Moxness, St. Paul; Harold H. Nelson, West St. Paul, and Edward A. O'Mara, Maplewood Village, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 640,547, May 23, 1967, abandoned.
This application April 24, 1970, Ser. No. 31,732
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **15 Claims**

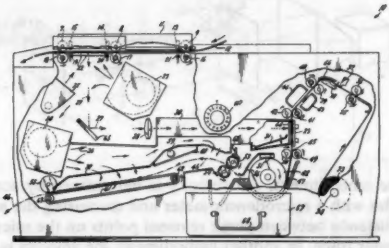


An electrographic copying apparatus and process for producing copies of graphic originals utilizing the electropowder process. The apparatus comprises a pod assembly for storing a supply of a photosensitive web material and for supporting sections thereof during imaging and development. The web material during development supported on the outer peripheral surface of the pod assembly and the developing surface is conductive to permit the electric field to be developed at the developing station. The pod preferably has a flat planar surface upon which the web is placed during imaging and a curved surface where the web is placed as the pod is moved during development. The pod is adapted for supporting two imaged sections to afford the production of two copies on each revolution of the pod.

3,706,490
EXACT LENGTH ADJUSTMENT MECHANISM FOR COPYING MACHINE

T. F. Aasen, Hollywood; Thomas E. Hartman, Opa Locka, and Martin Schaffel, Miami, all of Fla., assignors to Copystatics Manufacturing Corporation, Miami Lakes, Fla.

Filed Oct. 27, 1970, Ser. No. 82,861
Int. Cl. G03g *15/00*
U.S. Cl. 355—13 8 Claims

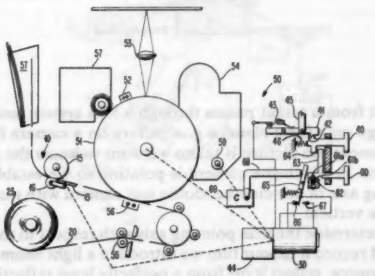


A mechanism for controlling the cutting from a roll of a sheet of copy paper whose length is the same as that of an original document fed into a copying machine. As in conventional systems, the leading edge of the original document is sensed to start the feed of copy paper. When the trailing edge of the original document is sensed, a knife operates to cut the copy paper and to stop further feed from the copy paper roll. As is known for systems of this type, the length of the copy paper sheet can be too short or too long, and the leading edges of the original and the copy sheet may not be in optical synchronization. The synchronization problem is overcome by providing an adjustably positioned sensor in the path of the original document. The length of the cut copy sheet is controlled by the setting of a potentiometer in an RC circuit coupled to the relay which controls the copy paper feed and the operation of the knife.

3,706,491
FUSER ROLL CLEANING METHOD AND APPARATUS FOR PERFORMING IT

Rudolph S. Furman, Lexington, and Jerrold F. Zimmer, Versailles, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,736
Int. Cl. G03g *15/00*
U.S. Cl. 355—133 7 Claims

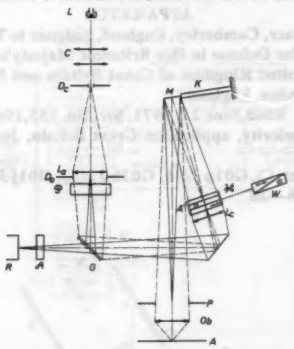


The backup roll of a roll fuser for fixing xerographic images is periodically cleaned by passing plain paper through the fuser roll couple at a slow rate while the backup roll is heated above a toner melt temperature. Roll cleaning is accomplished automatically by providing a xerographic document copier with a special slow rate operating cycle wherein image production is inhibited so that plain paper is fed through the roll couple in accordance with the cleaning method.

3,706,492
PHOTOELECTRIC SYSTEM AND METHOD FOR DETECTING THE LONGITUDINAL LOCATION OF SURFACES

Gerard Roblin, Ivry, and Georges Nomarski, Bourg La Reine, both of France, assignors to Agence Nationale de Valorisation de la Recherch (ANVAR), Courbeuoie, France

Filed Dec. 2, 1970, Ser. No. 94,473
Claims priority, application France, Dec. 5, 1969, 6942108
Int. Cl. G01b *9/02*
U.S. Cl. 356—5 6 Claims

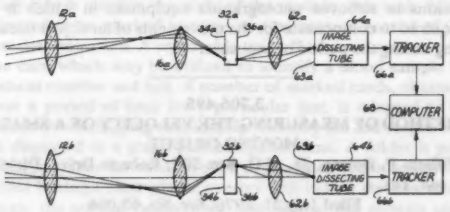


A method and an arrangement enabling the location of a plane or spherical, specularly reflecting or diffusing surface. The method comprises alternately modulating the "tube" or total length of the instrument in such a manner as to create a focusing error alternating with respect to that plane of the image which would correspond to perfect focus without modulation a variable photoelectric signal is provided by a photoreceiver which is subject to variations in light flux transmitted by an interferogram disposed in the portion common to the two waves in the plane of the pupil. An error signal produced by the treatment of the photoelectric signal is used to control the displacement of the objective or the object along the optical axis in order to focus or calculate the focusing error. The method and arrangement are useful especially in the field of metrology.

3,706,493
RANGING AND AIMING SYSTEM

Jerome J. Redmann, Granada Hills, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,092
Int. Cl. G01c *3/08*; G01s *3/78*
U.S. Cl. 356—4 3 Claims



A ranging and aiming system for determining the position of a source which emits continuous or noncontinuous forms of radiation. At least two optical systems whose axes are separated by a known distance contain lenses for focusing rays

from the source onto an image retaining surface. Apparatus is provided for determining the angular position of the radiation source with respect to the optical system axes and may comprise a relay lens system for viewing the position of the source on the rear phosphor surface of an image storage tube. The front of the tube may contain a photo cathode surface, with image retaining means within the tube. Moreover, the angular position may be determined by means of an image dissecting tube.

3,706,494

OPTICAL RATE-OF-DISPLACEMENT MEASURING APPARATUS

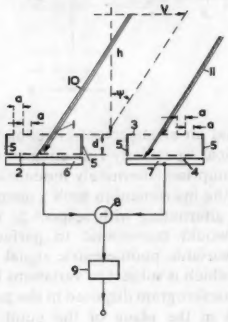
Peter Gardner, Camberley, England, assignor to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed June 21, 1971, Ser. No. 155,196

Claims priority, application Great Britain, June 19, 1970, 29,793/70

Int. Cl. G01p *3/36;* **G02b** *27/32;* **H01j** *3/14*

U.S. Cl. 356—28 **4 Claims**



According to the invention there is provided an optical masking device comprising a first pair of mask patterns and a second pair of mask patterns, each mask pattern formed of parallel alternately opaque and translucent bars, the mask patterns being mounted in parallel planes and in a fixed relationship to each other so that their bars are all parallel to each other and so that parallel light rays incident on both pairs of mask patterns such that they pass through the translucent bars of both patterns of the first pair of mask patterns with maximum transmission will be substantially obstructed by the opaque bars of one pattern of the second pair of mask patterns. Apparatus for the detection of apparent movement of an object point or scene in a given direction, and apparatus for the detection of such movement in two mutually orthogonal directions, both of which employ an optical masking device as described above, are also disclosed. Such apparatii have applications in airborne photographic equipment in which it is required to compensate for the movements of an object occurring during the period of exposure.

3,706,495

METHOD OF MEASURING THE VELOCITY OF A SMALL MOVING OBJECT

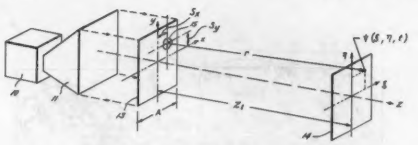
William P. Dotson, Jr., P.O. Box 507, Roberts Drive, Dickinson, Tex.

Filed July 31, 1970, Ser. No. 60,006

Int. Cl. G01p *3/36;* **G01b** *11/00*

U.S. Cl. 356—28 **11 Claims**

The velocity of a small moving particle is determined by allowing the particle to pass between a laser light source and a photographic film or plate. The laser is caused to illuminate the photographic film with coherent plane-wave light for a short interval of time while the particle is between the laser and the film to thereby record a hologram pattern on the film. The duration of the exposure time is made such that the particle moves a noticeable distance during such exposure time. The exposed photographic film is developed and the velocity of the particle is determined by analysis of the developed film.



In one embodiment, the velocity is determined by scanning the film with a microdensitometer and measuring the separation distance between phase reversal points on the microdensitometer trace. In another embodiment, the velocity is determined by reconstructing an image from the hologram pattern on the film and measuring the path length of the particle in the reconstructed image.

3,706,496

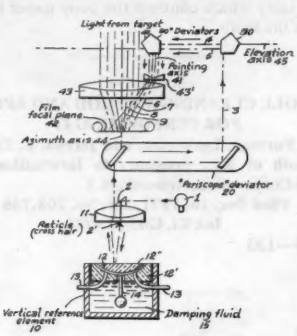
CINETHEODOLITE

George Geier, Teaneck, N.J., and William E. Mimmack, El Paso, Tex., assignors to The United States of America as represented by the Secretary of the Army

Continuation-in-part of Ser. No. 669,319, Sept. 20, 1967, abandoned. This application Jan. 13, 1971, Ser. No. 106,211

Int. Cl. G01c *1/10*

U.S. Cl. 356—149 **5 Claims**



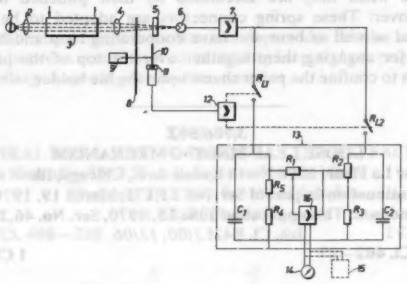
Light from a target passes through a lens system and forms an image on a focal plane, e.g. a picture on a camera film. At the moment the picture is taken we want to know the precise direction in which the camera is pointing so we establish the pointing axis of our cinetheodolite and camera with respect to the true vertical.

To determine the true pointing axis with respect to the vertical and record it on our film we introduce a light beam from a point source, reflect it off from a perfectly level reflecting surface, and past a reticle or cross hairs to create an image of the reticle, split the beam and reticle image into four component beams and images, and direct those four beams and images into the camera by means of optical deviators which are immune to the mechanical errors of the instrument. Each component beam and reticle image pinpoints a mark on the picture as related to the pointing axis with respect to the true vertical. In other words, the true pointing axis is determined by the imaginary "center" between the four beams and images.

3,706,497
METHOD AND APPARATUS FOR DETERMINING COLORIMETRIC CONCENTRATIONS

Arne Robert Lindberg, Slingergatan 18, 431 39 Molndal, Sweden

Filed Nov. 5, 1970, Ser. No. 87,079
Int. Cl. G01j 3/48
U.S. Cl. 356—188 8 Claims

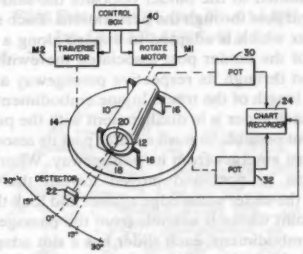


A method and an apparatus for determining colorimetric concentrations wherein the difference between the light absorption of a medium in two or more different wave-length ranges is measured by means of an automatic wave-length switching, whereupon the concentration of the medium is calculated in dependence of said difference and the absolute absorption of the medium in one of the wave-length ranges.

3,706,498
AUTOMATIC BEAM SCANNING APPARATUS FOR EVALUATING OPTICAL BEACONS

Teddy J. Peacher, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed April 23, 1971, Ser. No. 136,696
Int. Cl. G01j 1/00, 1/42
U.S. Cl. 356—121 4 Claims

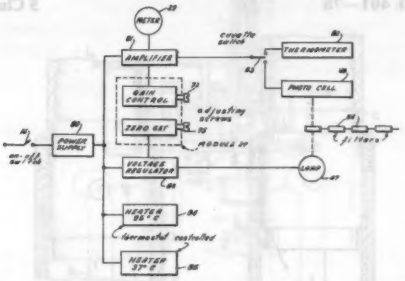


An automatic beam scanning apparatus is disclosed wherein a cylindrical open-ended chamber houses an optical beacon for evaluation. The chamber is rotatable about its longitudinal axis for determining the beacon beam intensity at selectable points off the axis of rotation. The chamber also is traversable in a path which sweeps a beacon beam over a detector. Hence, a predetermined rotate and sweep arrangement allows detection of the spatial energy distribution of the beam of an optical beacon.

3,706,499
BLOOD TEST SYSTEM

Edward J. Rapoza, Butler; Maxwell E. Siegel, Sussex, both of N.J.; Weems E. Estelle, Southport, Conn.; Pasquale M. Petrucci, Orange, Conn.; Joseph S. Linarducci, Wilton, Conn.; John Hamma, Milford, Conn., and John Montgomery, Trumbull, Conn., assignors to Becton Dickinson and Company, East Rutherford, N.J.

Filed March 2, 1970, Ser. No. 15,469
Int. Cl. G01j 1/42, 3/48
U.S. Cl. 356—184 7 Claims



A blood testing system which includes a colorimeter for observing the light transmission characteristics of a reacted blood sample to determine the concentration of a particular component. The colorimeter includes a lamp, a sample holding well, a photocell, and a meter having a needle to indicate the output of the photocell. A removable module is provided which is adapted to plug into the circuitry of the instrument and adjustably calibrate the instrument for a particular blood determination. The module includes a printed scale which is designed to be positioned immediately adjacent the meter needle when the module is operatively connected to the colorimeter, the units of the scale being correlated to the particular blood determination of the module such that the scale reads directly in the units of the test being conducted. By employing a number of modules, each being color-coded and calibrated for a particular blood determination, the colorimeter may be easily adapted to perform a number of tests by merely inserting the appropriate module. A carousel is provided for mounting several modules in the instrument, the carousel being rotatable to sequentially translate individual modules to the operative position adjacent the output needle of the meter. A number of filters are provided for the colorimeter, and a mechanism is incorporated which is designed to selectively position individual filters in the light path of the colorimeter. A patient record card is provided which is adapted to overlie and be temporarily affixed to the module. The card, which may also be color-coded, includes a scale which overlies the scale of the module, this scale being adapted to be marked to serve as a permanent record of the test determination. A removable tear-off tab is associated with the card which may be utilized to identify a blood sample by patient number and test. A number of marked cards, obtained over a period of time for a particular test, is adapted to be placed in overlapping relationship whereby the test results will be displayed as a graph plotted against time. A folder is provided to retain the cards in such overlapping relationship, the folder having a clear plastic overlay with indicia thereon to indicate the normal range of the test results. The cuvette containing the reagent required for the blood determination is provided with a molded plastic cap which is designed to retain a capillary within the cuvette when the cap is attached. For this purpose, the cap includes an integral depending flap having an aperture therethrough, the aperture being designed to threadedly receive the capillary.

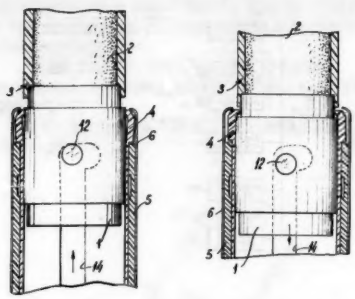
ERRATUM

For Class 401—78 see:
Patent No. 3,706,354

3,706,500
HOLDERS FOR HOUSING PASTY MATERIALS

Ralph Gruska, Val-de-Marne, France, assignor to SEBEC Societe d'Exploitation de Brevets d'Emballage Cosmetique S.A., Fribourg, Switzerland

Filed Jan. 18, 1971, Ser. No. 107,235
Claims priority, application France, Jan. 21, 1970, 7002057
Int. Cl. A45d *40/06*
U.S. Cl. 401—78 **5 Claims**

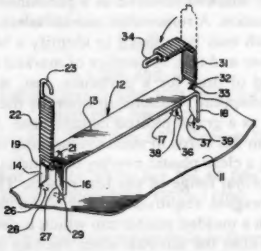


A holder for lipsticks or the like is of the known kind comprising two relatively rotatable co-axial sleeves with a projecting control knob on the inner sleeve. A sliding holder for the stick has lugs extending through slots in the inner sleeve and into slots in the outer sleeve. One set of slots is longitudinal and the other helicoidal. The slots in the inner sleeve are open at the end further from the control knob. A transparent cover or shell for the stick is fitted onto the sliding holder. The invention is characterized in that the shell has an internal shoulder equal in diameter to the end part of the sliding holder on which it is mounted. The inner sleeve has an internal flange at that end further from the control knob and of a diameter between the internal diameter of the shell and the diameter of the internal shoulder. An annular space remains between the end of the shell and the remainder of the sliding holder, its axial length being not less than the axial length of the flange. When the lipstick is to be first used it is caused to project until the flange enters said space. The stick is then withdrawn somewhat leaving the shell abutting the flange. The shell is then discarded.

3,706,501
FILE FOLDER PAPER FASTENER

Coleman R. Chamberlin, P.O. Box 84, New Windsor, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,882
Int. Cl. B42f *3/06*
U.S. Cl. 402—15 **3 Claims**

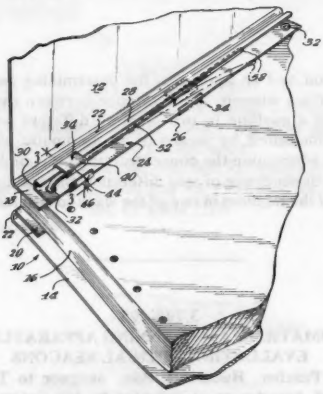


A paper fastener for a file holder or a stack of paper sheets is made from a elongated base strip slit at its opposite ends to provide spaced prongs and an intermediate loop, when folded for the attachment of the base strip or clip to the folder material after the prongs have penetrated the same and the loop being bent to retain in a self supporting manner upwardly extending coiled springs, the lower turn of the coil spring resting flush against the loop so that the springs when bent are made free will return to vertically extending position, these spring connectors are made flat by squashing the coils spring or with turns of eliptical shape and such that they accommodate little thickness or space over the top of the paper sheets when they are assembled by their punched holes thereover. These spring connectors are adapted to be extended as well as bent and have cooperating loop and hook ends for engaging them together over the top of the paper sheets to confine the paper sheets upon the file holder.

3,706,502
LOOSE LEAF BINDING MECHANISM

Hector La Fleur, 6308 North Kedzie Ave., Chicago, Ill.

Continuation-in-part of Ser. No. 21,171, March 19, 1970, abandoned. This application June 15, 1970, Ser. No. 46,275
Int. Cl. B42f *3/00, 13/06*
U.S. Cl. 402—17 **1 Claim**



A loose leaf binder securing mechanism in which a rigid track is mounted to the exterior of one cover hinge strip with sliders positioned on the track prior to mounting. The sliders are movable along portions of the track between passageways in the track in registry with perforations in the hinge strip and the assembled sheeted material to be bound. Flexible binder posts are mounted to the binder opposite the said one cover hinge strip and pass through the perforations. Each slider has a hook member which is adapted to engage along a portion of the surface of the binder post associated therewith when the post is passed through its respective passageway and bent to lie along the length of the track. In one embodiment, the hook member of each slider is in disalignment with the passageways so that it is not possible to push a slider past its associated post where the post emerges from its passageway. When a slider is engaged upon its post and moved toward the associated passageway, the slider will wedge against and lock the post adjacent the point where it extends from the passageway. In an alternative embodiment, each slider has a slot adapted to engage a post in locked condition when the slider is pushed adjacent its passageway.

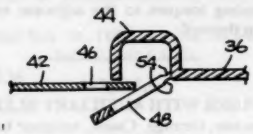
3,706,503
LEAF BINDING

James P. Foley, Crest Road, Katonah, N.Y.

Filed June 30, 1969, Ser. No. 837,405
Int. Cl. B42f *13/00, 13/12*
U.S. Cl. 402—69 **4 Claims**

Loop-type leaf binding arrangements wherein binding loops are struck from a base member and bent around and back

down onto the base member and either permanently secured to the base member or releasable therefrom by virtue of a



moveable base member portion which provides relative movement between one end of each binding loop and corresponding enlarged openings in the base member.

3,706,504

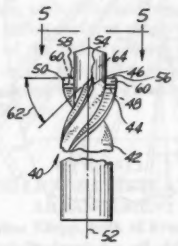
SPIRAL DRILL HAVING UNEQUAL CUTTING FACES

Louis Simonffy, 7253 West Lafayette, Detroit, Mich.

Filed July 29, 1970, Ser. No. 59,243

Int. Cl. B23b *51/02*

U.S. Cl. 408—228 **1 Claim**



A tool for cutting certain extremely hard materials, such as the aluminum bronzes, which consists of a working end having a plurality of cutting faces, all of which are disposed substantially parallel to the longitudinal axis of the tool. Cutting edges, along the forward ends of the cutting faces, are all disposed at approximately the same angle to the longitudinal axis of the tool. A clearance surface is rearwardly disposed at an angle of approximately 45° from each of the cutting faces.

3,706,505

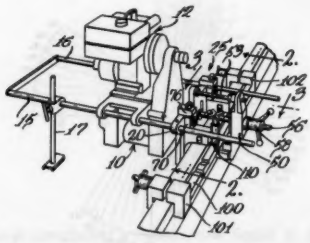
PORTABLE RAIL DRILL

Chris Stougaard, Racine, Wis., assignor to Racine Railroad Products, Inc.

Filed Feb. 12, 1971, Ser. No. 114,891

Int. Cl. B23b *45/08, 45/14*

U.S. Cl. 408—78 **7 Claims**



A portable rail drill having pre-set adjustments for different size rails to properly locate the center of the drill, improved clamping structure to securely lock the drill to the rail, and index means for locating the rail drill in a plurality of positions relative to a rail joint to drill a number of holes in the rail accurately located relative to each other.

3,706,506

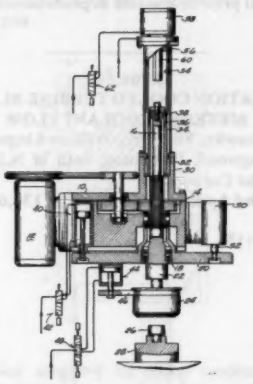
METAL CUTTING MACHINES

Marvin H. Dorak, Manitowoc, Wis., assignor to Kaufman Mfg. Co., Manitowoc, Wis.

Filed Dec. 21, 1970, Ser. No. 100,222

Int. Cl. B23b *47/22*

U.S. Cl. 408—130 **2 Claims**



A metal working machine employing expandible and collapsible cutting tools has a motor driven spindle rotating in only one direction. The spindle has axial movement relative to its driving gear. The axial movement is controlled forwardly, first by a fast advance hydraulic system which also adjusts the expandible and/or collapsible cutting tool to its cutting position, and second by a lead screw and solid feed nut which advances the cutting tool as a required rate for at desired purpose. At the end of the cutting movement the hydraulic system expands or collapses the cutting tool, as the case may be, and starts to rapidly withdraw the tool from the workpiece. During this rapid withdrawal, another motor rapidly rotates the lead screw in a direction to unscrew it back to its starting position.

3,706,507

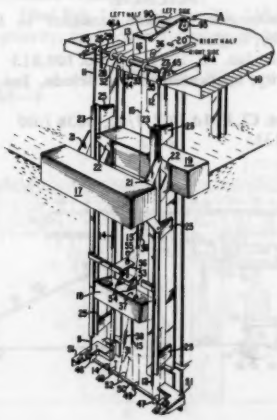
TIDE-ACTUATED MACHINE

Charles C. Dunbar, 62 Bowdoin Street, Portland, Maine

Filed Aug. 11, 1971, Ser. No. 170,756

Int. Cl. F01d *25/28*

U.S. Cl. 415—7 **6 Claims**



A machine is disclosed for deriving power from the vertical tidal movement of a floating body whereby power continues to

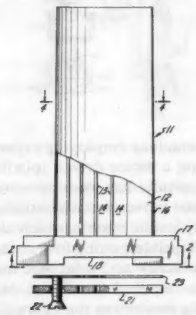
be supplied to a rotatable power shaft at high tide and at low tide and adjacent periods when tidal movement is relatively slight by power supplied by a weight which is controlled so as to descend independently of tidal movement while being lifted by float means during rising tidal movement. A clock mechanism controls weight holding and releasing means in timed relation to tidal movements and means is provided for setting said clock mechanism so as to release the weight prior to high tide and prior to low tide in predetermined timed relationship.

3,706,508

TRANSPIRATION COOLED TURBINE BLADE WITH METERED COOLANT FLOW

Seymour Moskowitz, Fort Lee, William Lingwood, deceased, by Sean Lingwood, Watchung, both of N.J., assignors to Curtis-Wright Corporation

Filed April 16, 1971, Ser. No. 134,601
Int. Cl. F01d *5/18*
U.S. Cl. 415—115 4 Claims



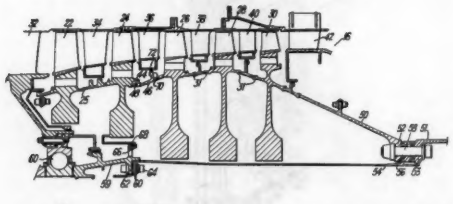
A turbine stator blade having a porous skin covering a strut member with channels for cooling air fed from the root, and a removable metering plate attached to the root and having orifices of various sizes for transmitting air to the blade channels, the metering plate being selected for having appropriate orifices for the cooling requirements of blades in differing temperature and pressure environments.

3,706,509

ROTARY BLADED STRUCTURE FOR A FLUID FLOW MACHINE

Jack Britt, Ambergate, England, assignor to Rolls-Royce Limited, Derby, England

Filed Jan. 15, 1971, Ser. No. 106,813
Claims priority, application Great Britain, Jan. 20, 1970, 2,744/70
Int. Cl. F01d *5/02, 1/02*; B63h *1/00*
U.S. Cl. 415—131 7 Claims



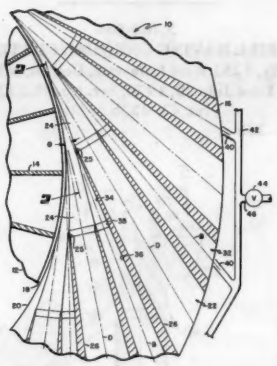
A rotary bladed structure for a fluid flow machine comprising adjacent coaxial bladed rotors arranged for rotation together, a helical torque-transmitting connection connecting said bladed rotors together and permitting limited axial and angular relative movement of said rotors, and loading means for loading said connection against said relative movement by applying opposing torques to the adjacent rotors about the axis of rotation thereof.

3,706,510

PIPE DIFFUSER WITH AUXILIARY BLEED SYSTEM

John A. O'Connor, Orange, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Aug. 2, 1971, Ser. No. 168,205
Int. Cl. F01b *25/00*; F04d *29/44*
U.S. Cl. 415—145 5 Claims



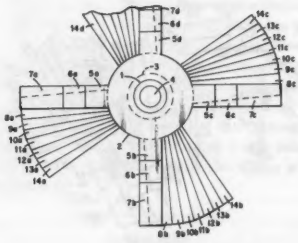
The disclosure illustrates a "pipe" diffuser having basic flow passages sized to handle the output requirements of a centrifugal compressor without a bleed requirement. The diffuser has a series of auxiliary bleed passages intersecting the inlet portions of the pipe diffuser passages. The bleed passages are sized to handle a supplementary bleed flow requirement when needed.

3,706,511

LAMINATED PLASTIC PROPELLER

Augustus E. Abbott, Cincinnati, Ohio, assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed April 6, 1971, Ser. No. 131,755
Int. Cl. B01f *7/24*
U.S. Cl. 416—229 4 Claims



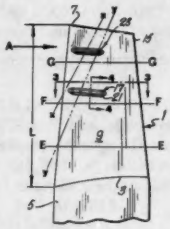
An improved corrosive- and abrasive-resistant mixer propeller for thorium fluoride and zinc fluoride in the production of thorium metal. The propeller is preferably constructed from laminated plastic components.

3,706,512

COMPRESSOR BLADES

Arthur D. Streishik, Montreal, Quebec, Canada, assignor to United Aircraft of Canada Limited, Longueuil, Quebec, Canada

Filed Nov. 16, 1970, Ser. No. 89,640
Int. Cl. F01d 5/10
U.S. Cl. 416—236 5 Claims



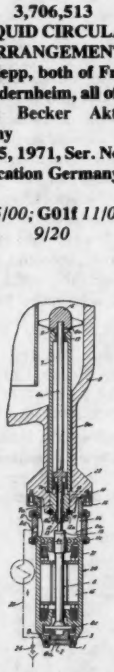
An improved thin, plate-like, compressor blade having stiffening ribs on its airfoil surfaces extending from or adjacent the leading edge of the blade toward the trailing edge and being positioned on the blade to reduce the tendency of the blade to fail by buckling when the leading edge of the blade is struck by foreign objects.

3,706,513

REACTOR LIQUID CIRCULATING PUMP ARRANGEMENT

Hans Holz; Christian Klepp, both of Frankenthal, and Gunter Koll, Frankenthal-Studernheim, all of Germany, assignors to Schanzlin Klein & Becker Aktiengesellschaft, Frankenthal/Pfalz, Germany

Filed April 5, 1971, Ser. No. 131,168
Claims priority, application Germany, April 11, 1970, P 20 17 415.6
Int. Cl. F04b 17/00, 35/00; G01f 11/06, 11/30; H02k 9/00, 9/20
U.S. Cl. 417—360 10 Claims



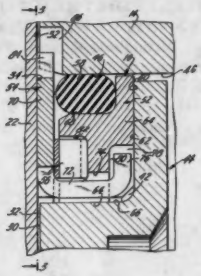
A pump circulating a radioactive liquid in a reactor container has a housing including a support tube projecting into the reactor container. A shaft is mounted in the support tube, and has a pump wheel located in the container. The shaft can be lowered so that sealing faces of the pump wheel and support tube abut each other, and communication between container and pump housing is interrupted. In this position, the liquid can be discharged from the pump housing for servicing a motor in the same driving the shaft.

3,706,514

INNER SEAL ASSEMBLY FOR ROTARY MECHANISMS

Max Ruf, Obereisesheim, Germany, assignor to Audi Nsu Auto Untion Aktiengesellschaft, Neckarsulm and Wankel G.m.b.H. Lindau, Bodensee, both of, Germany

Filed Sept. 9, 1971, Ser. No. 179,059
Claims priority, application Germany, Oct. 27, 1970, P 20 52 623.2
Int. Cl. F01c 19/00
U.S. Cl. 418—104 20 Claims



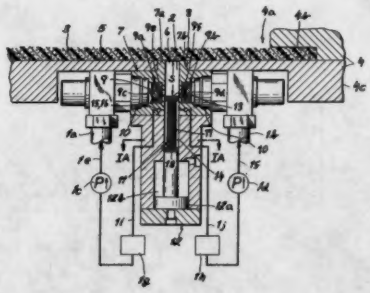
The inner seal assembly for rotary mechanisms having a rotor mounted within a housing for rotation on an eccentric of a crankshaft comprises a seal-ring interconnected with a support ring for conjoined rotation and limited axial movement relative to each other and a biasing means disposed between the two rings for urging the rings to separate. A resilient seal means is carried by the outer peripheral portion of the seal-ring. The unitary inner seal assembly is positioned in a recess defined by a peripheral step in a disk attached to the crankshaft and an annular, axially extending wall formed in the rotor so that the seal-ring is in sealing abutment against the radial wall of the peripheral step while the resilient seal means seals the interstices between the axially extending wall of the rotor and the periphery of the disk. The support ring and rotor are constructed and arranged to interconnect and thereby provide conjoined rotation of the inner seal assembly and rotor.

3,706,515

DEVICE FOR FEEDING FLOWABLE MATERIAL TO A MOLD CAVITY

Rudi Keuerleber, Esslingen, and Fritz-Wilhelm Pahl, Delbruck, both of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Feb. 16, 1971, Ser. No. 115,205
Claims priority, application Germany, Feb. 20, 1970, P 20 07 935.0
Int. Cl. B29d 27/04
U.S. Cl. 425—4 9 Claims



A device for feeding flowable materials, e.g., a mixture of inter-reactive components, into a mold cavity, has a mixing

chamber opening directly into the mold cavity without constriction and a pair of inlets connected to respective supply lines for the components. A control member or plunger is provided in the reaction chamber to close its outlet flush with a mold surface and is provided with grooves in a closed condition of the slider which create recirculation paths for the components when they are not fed to the mixing chamber.

3,706,516

APPARATUS FOR PRODUCING FOAM SECTIONS FROM COMPONENTS THAT REACT QUICKLY WITH ONE ANOTHER WHEN MIXED

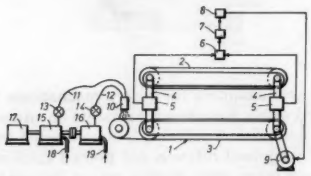
Heinz Kisteneich, Birlinghoven, and Ferdinand Proksa, Bergisch-Neukirchen, both of Germany, assignors to Maschinenfabrik Hennecke GmbH, Leverkusen, Germany

Filed May 16, 1969, Ser. No. 825,283

Claims priority, application Germany, May 24, 1968, P 17 78 693.5

Int. Cl. B29f *1/06*

U.S. Cl. 425—141 **9 Claims**



In the production of foamed articles wherein the foam producing reaction occurs between the belts of a double belt conveyor and the double belt conveyor serves as a mold, the pressure of the foaming reaction of the belts is sensed and, to obtain a uniform structure in the product, the feed rate of the components reacting to from the foam, per unit area of the belt, is correspondingly varied.

3,706,517

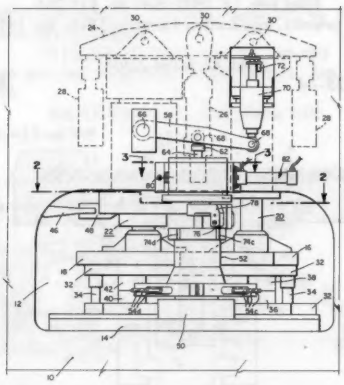
TURRET INDEXING MEANS

Theodore C. Wheaton, III, Ocean City, and Walter Panas, Millville, both of N.J., assignors to Wheaton Industries, Millville, N.J.

Filed Jan. 6, 1971, Ser. No. 104,359

Int. Cl. B29d *23/03*

U.S. Cl. 425—324 B **11 Claims**



A reliable, rapid turret indexing means having particularly desirable decelerative characteristics, which means is easily combined with simple turret engagement and disengagement movements, and which means is especially adapted for transferring radially disposed core rods between work stations in an injection blow molding machine. This indexing means comprises a crank arm pivotally mounted for movement about the turret axis between first and second limit positions and connected to the driving end of a linear link member the other end of which is driven through a linear path parallel to the crank arm at the second of its limit positions. A driving means, preferably a hydraulic cylinder, is also provided to exert compressive force on the linear link member to propel the crank arm from its first limit position toward its second limit position and to return the crank arm to its first position.

3,706,518

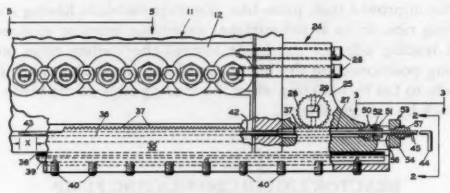
EXTRUSION DIE DECKLE MEANS

William S. Bunte, Somerville, and Lino E. DeGasperis, Clinton, both of N.J., assignors to Egan Machinery Company

Continuation-in-part of Ser. No. 108,459, Jan. 21, 1971, Pat. No. 3,694,132. This application June 17, 1971, Ser. No. 154,138

Int. Cl. B29d *7/04*

U.S. Cl. 425—381 **9 Claims**



An extrusion die having a discharge orifice in the form of a relatively long narrow slot and adapted to extrude a film or sheet of a flowable plastic material. The die is equipped with external deckle means adjustable positioned along the outer end of the discharge orifice and internal deckle means adjustable positioned along the inner end of the discharge orifice. The external and internal deckle means are adjustable in unison or separately, as desired, along corresponding ends of the discharge orifice. The die and the external and internal deckle means are so constructed and arranged as to effectively regulate and control both the width and the thickness of a plastic film or sheet that is extruded from the die.

3,706,519

DEVICE FOR PROVIDING HOLLOW PLASTIC BODIES, AND ESPECIALLY PLASTIC PIPES, WITH A REINFORCED SLEEVE-END PROVIDED WITH A BEAD

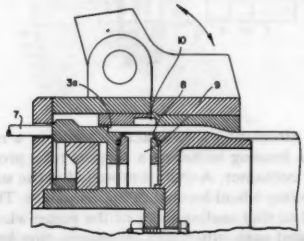
Guenter Soethje, Rehau/Bayern, Germany, assignor to Rehau Plastiks of Canada Limited, Montreal, Quebec, Canada

Filed Sept. 29, 1970, Ser. No. 76,464

Claims priority, application Germany, Oct. 6, 1969, P 19 50 270.6

Int. Cl. B29c *17/07*

U.S. Cl. 425—389 **2 Claims**



Apparatus for providing beaded sleeve ends on plastic pipes comprising an outer mould part defining a grooved outer

mould surface and an inner mould part defining an inner mould surface. The inner mould part includes an expanding mandrel and an upsetting ring joined by a flexible ring for forming a bead in the grooved surface. The upsetting ring has a shoulder for engaging the end surface of the pipe and moving the pipe end axially inwardly to provide additional plastic material during the bead forming operation.

3,706,520

APPARATUS AND METHOD FOR HEATING SHAFT FURNACES WITH FUEL GAS

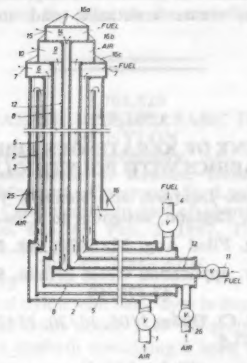
Werner Grimm; Karl H. Olschewski, and Rolf E. Sack, all of Hamburg, Germany, assignors to Shell Oil Company, New York, N.Y.

Filed Aug. 20, 1971, Ser. No. 173,464

Claims priority, application Germany, Aug. 28, 1970, P 20 42 838.0

Int. Cl. F23k *1/00*

U.S. Cl. 431—10 **3 Claims**



An improved fuel gas burner for vertical shaft furnaces has separately controllable fuel and air supply means for controlling combustion in addition to primary fuel and air supply means for supplying the main portion of these combustion gases.

3,706,521

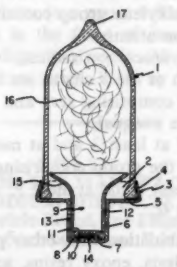
FLASHLAMP

Bernard Kopelman, Salem; Warren H. Hay, Beverly, both of Mass., assignors to Sylvania Electric Products Inc.

Continuation of Ser. No. 662,755, Aug. 23, 1967, abandoned. This application April 6, 1971, Ser. No. 131,802

Int. Cl. F21k *5/02*

U.S. Cl. 431—93 **3 Claims**



A percussive-type flashlamp has a glass envelope, a metal base sealed to one end and having a cup portion extending from it, with an anvil fitted into said cup by crimping or the like, the anvil having a cylindrical portion terminating at one end in a flat annular rim seated at the flat bottom of the cup and having a concave portion to form an enclosed cavity with said flat bottom of the cup. This construction provides a rigid anvil which will hold firm against the action of the firing pin, and which forms a cavity for a percussive charge, the opposite flat portion of the cavity being held with a precise spacing between them. The end of the cylindrical portion of the anvil terminates in a flaring shield which spreads out to the inner diameter of the envelope to protect the metal base from molten metal particles, or agglomerates of particles, from the foil of shredded metal, for example of zirconium, with which the envelope is filled. There is also a filling of oxygen at high pressure in the envelope, which is sealed.

3,706,522

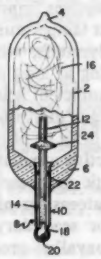
PHOTOFLASH LAMP AND METHOD OF PROVIDING DEFLECTOR-SHIELD THEREFOR

John W. Shaffer, Williamsport, Pa., assignor to Sylvania Electric Products, Inc.

Filed Dec. 28, 1970, Ser. No. 101,633

Int. Cl. F21k *5/02*

U.S. Cl. 431—93 **3 Claims**



A percussion-type photoflash lamp in which the primer comprises a metal tube sealed in and extending from one end of the lamp envelope and a wire anvil supported in and substantially coaxial with the tube. The wire anvil has a coating of fulminating material near the end therefor disposed in the tube and a metallic deflector-shield bead press-forged thereon near the other end thereof which is disposed inside the lamp envelope. The method of providing the deflector-shield bead on the anvil comprises: positioning an annular metallic member coaxially upon the wire anvil, and applying pressure to both shape the annular member and clinch it securely to the anvil.

3,706,523

RESISTAGE CANDLE DEVICE

John H. Kumm, 511 Heavitree Lane, Severna Park, Md.

Filed Nov. 16, 1970, Ser. No. 89,939

Int. Cl. F23q *2/32*

U.S. Cl. 431—126 **1 Claim**

A candle device, which has similar characteristics to a color coded electrical resistor, is provided with a plurality of colored bands each signifying a different number in accordance with the international color code arrangement. The candle wick symbolizes the wire connection at the end of the resistor. The numerical information identified in the color-bands on the surface of the candle device by mere visual observation thereof, indicates a number, for example, the numerical age of a person at a birthday party.

CHEMICAL

3,706,524

PROCESS FOR THE DYEING OR PRINTING OF TEXTILE FIBRE MIXTURES USING SIMULTANEOUSLY CATIONIC AND ANIONIC DYESTUFF

Hermann Flensberg, Weil on the Rhine, Germany, and Felix Frey, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,842

Claims priority, application Switzerland, Mar. 24, 1969, 4,382/69

Int. Cl. D06p *3/82*

U.S. Cl. 8—21 A 11 Claims

A process for the simultaneous dyeing or printing of textile fibre mixtures with cationic and anionic dyestuff is disclosed which comprises impregnating or printing the textile fibre mixture, at temperatures below the absorption temperature of the dyestuffs, with an optionally thickened solution containing at least one cationic and at least one anionic dyestuff, sufficient acid and buffer salt for the purpose of maintaining a pH-value of the solution of between 3 and 7, at least 0.5 g./l. of sulphated or sulphonated compound as anion-active auxiliary, and at least 0.5 g./l. of an amide of aliphatic monocarboxylic acids containing from 8 to 20 carbon atoms, or of mixtures of such fatty acids with primary or secondary amines containing at least one lower hydroxyalkyl group, and/or of a water-soluble condensation product from 1 equivalent of fatty acids having from 8 to 20 carbon atoms or from mixtures of such fatty acids with from 1 to 3 equivalents of a di- and/or trialkanolamine, and, optionally, further auxiliaries, and finishing the dyeing or print by a moist heat treatment. Thereby, the textile fibre mixtures are dyed or printed very evenly, in one shade or in several shades, with good fastness properties and without the so-called "sandwich-effect."

3,706,525

WATER SWOLLEN CELLULOSE DYEING WITH HIGH MOLECULAR WEIGHT DISPERSE DYE IN A GLYCOL ETHER SOLUTION

John Blackwell, Kennett Square, Pa., William Henry Gumprecht, Penns Grove, N.J., and Roy Emerson Starn, Jr., West Chester, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 778,809, Nov. 25, 1968. This application Mar. 8, 1971, Ser. No. 122,227

Int. Cl. D06p *3/82*

U.S. Cl. 8—21 C 45 Claims

A process for dyeing water swellable cellulosic materials, or mixture or blends thereof with synthetic materials, which process comprises contacting said cellulosic material in any sequence with water in sufficient amount to swell the cellulose, a preformed dye of low water solubility, and a dye solvent which is an ethylene glycol or a polyethylene glycol, e.g. diethylene glycol monomethyl ether, is at least partly miscible with water, and boils above about 150° C. at atmospheric pressure, provided that at some stage during the process the interior of the swollen cellulose is contacted with a solution of the dye in aqueous dye solvent or dye solvent.

3,706,526

PROCESS FOR TREATING CELLULOSIC MATERIAL WITH FORMALDEHYDE AND SULFUR DIOXIDE

Ronald Swidler, Pasadena, and Katherine W. Wilson, Newport Beach, Calif., assignors to Cotton Incorporated, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 706,792, Feb. 20, 1968. This application Dec. 6, 1971, Ser. No. 205,399

Int. Cl. D06m *1/16, 13/14*

U.S. Cl. 8—115.7 13 Claims

Cellulosic materials such as cotton fabrics are treated at high temperatures with formaldehyde and sulfur dioxide in the presence of moisture to improve their dimensional stability, crease resistance, and smooth drying characteristics.

3,706,527

TREATMENT OF KERATINOUS FIBRES AND FABRICS WITH POLYTHIOLS

Bryan Dobinson, Duxford, and Kenneth Winterbottom, Whittlesford, England, assignors to Ciba-Geigy AG

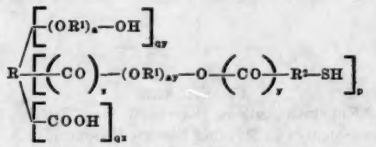
No Drawing. Filed Aug. 25, 1970, Ser. No. 66,903

Claims priority, application Great Britain, Sept. 2, 1969, 43,478/69

Int. Cl. D06m *3/06, 13/20, 13/26*

U.S. Cl. 8—127.5 19 Claims

A process for modifying keratinous materials by using a polythiol ester of the formula



wherein

R represents a hydrocarbon radical, containing a chain of at least 3 and at most 60 carbon atoms,

R^1 represents an alkylene group containing at least 2 and at most 6 carbon atoms,

R^2 represents a hydrocarbon radical,

a, *x*, and *y* in each of the *p* chains are individually chosen from the group comprising zero and 1, with the proviso that *x* and *y* are unequal,

p is an integer of at least 3 and at most 6,

q is chosen from the group comprising zero and positive integers of at least 1 and at most 3,

$(p+q)$ is at most 6,

optionally in combination with other polymeric polymercaptanes, aminoplasts, epoxy resins, acrylic resins, acrylamide or polyisocyanates. The polymers cure on the fibre. The keratinous materials are rendered resistant to shrinkage and durable press characteristics are imparted to them. The treated material retain their dimension and shape when washed in machines and have good recovery from wrinkling.

3,706,528

MODIFYING KERATINOUS TEXTILES AND FIBRES WITH MERCAPTAN POLYESTERS

Bryan Dobinson, Duxford, Paul Hope, Great Shelford, and Kenneth Winterbottom, Whittlesford, England, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,553
Claims priority, application Great Britain, Dec. 5, 1969, 59,661/69
Int. Cl. D06m *3/02*
U.S. Cl. 8—128 A 7 Claims

A process for modifying textiles and fibres of keratinous material, in particular a process for rendering the material resistant to shrinkage and for imparting durable press characteristics to the material is provided. This process comprises treating the material with an ester containing at least two mercaptan groups per molecule, obtainable by reaction of a monomercaptodicarboxylic acid or its anhydride, a substance containing at least two alcoholic hydroxyl groups or one 1,2-epoxide group, and, optionally a substance containing at least one mercaptan group; and curing the ester on the material.

3,706,529

SACCHARINE ASSISTED BASIC DYEING OF NYLON

Egon H. Hacklander, Spartanburg, S.C., and Julian J. Hirshfeld and Bertie J. Reuben, Decatur, Ala., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 613,763, Feb. 3, 1967. This application Apr. 3, 1970, Ser. No. 25,583
Int. Cl. D06p *5/06*
U.S. Cl. 8—172 12 Claims

The dyeing of nylon with basic dyes is improved through the addition of from about 1 to 10 grams per liter of saccharine to a dyebath containing a basic dye and maintained at a temperature within the range of from about 150° to about 212° F.

3,706,530

PROCESS FOR THE DYEING OF TEXTILE MATERIAL WITH DYE CARRIER OF PREDOMINANTLY HIGHER BOILING ALKYL BENZENES

Hans-Peter Baumann, Munchenstein, Basel-Land, and Robert Christian Keller, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed June 1, 1970, Ser. No. 42,578
Claims priority, application Switzerland, July 1, 1969, 10,049/69
Int. Cl. D06p *1/68, 5/00*
U.S. Cl. 8—174 5 Claims

This invention relates to a process for dyeing or printing polyester fibres in the form of loose fibre, yarn or piece goods using disperse dyes in the presence of carriers which contain at least 30% by weight of alkylbenzenes.

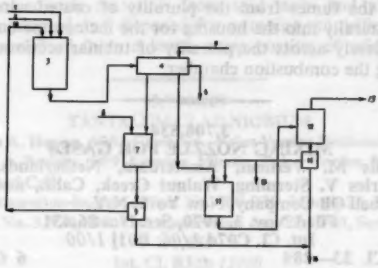
3,706,531

PROCESS FOR THE MANUFACTURE OF SODIUM SULPHATE

Giorgio Cozza, Gabriele Bottai, and Filippo Barilli, Milan, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy

Filed Dec. 7, 1970, Ser. No. 95,744
Claims priority, application Italy, Dec. 23, 1969, 26,203/69
Int. Cl. C01d *5/00*; C01q *49/02*
U.S. Cl. 423—551 4 Claims

Sodium sulphate is made from a solution of the ferrous sulphate by product of titanium dioxide manufacture, by precipitating iron hydroxide with sodium hydroxide, removing the iron hydroxide, precipitating part of the sodium sulphate formed in the solution by adding more sodium hydroxide and recycling the residual liquor to the iron hydroxide precipitation stage.



3,706,532

METHOD FOR DETERMINING ZINC CONCENTRATION IN AQUEOUS MEDIUMS

Charles A. Noll, Philadelphia, Pa., assignor to Betz Laboratories, Inc., Trevase, Pa.

Filed Aug. 20, 1971, Ser. No. 173,663
Int. Cl. G01n *31/22, 33/18*
U.S. Cl. 23—230 R 14 Claims

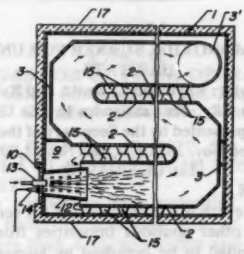
The present disclosure is directed to a method for determining the zinc concentration in an aqueous medium. More specifically, the method is directed for use to aqueous mediums which contain contaminated and perhaps interfering metal ions, such as the cations of aluminum, iron and copper. According to the method, the sample of the aqueous medium is acidified, treated with a buffered complexing agent to complex any aluminum and iron ions present, treated with an organo-sulfur compound which will complex with any copper ions present and discriminate against any zinc ions present. An indicator compound which will react with the zinc to produce a color has been added to the aqueous medium and the color intensity of the resulting solution is ascertained. The color intensity is then compared with the color intensity of known quantities of zinc and the indicator compound, and the concentration of the zinc is ascertained accordingly.

3,706,533

THERMAL INCINERATION UNIT

Gerald L. Brewer, Norwalk, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 28, 1970, Ser. No. 102,056
Int. Cl. F23g *7/06*; F23j *5/06*
U.S. Cl. 23—277 C 4 Claims



A fume incinerating unit having a multiple section, tubular-form combustion chamber, where the sections are connected in a serpentine manner and positioned within

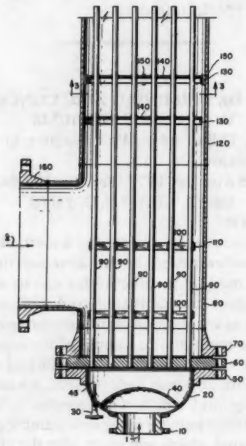
a fume receiving housing in a manner whereby the fumes will pass over and around the plurality of sections in a heat exchange relationship therewith. The unit is particularly adapted for use with wire enameling-drying ovens where the fumes from the plurality of coated wires can pass laterally into the housing for the incinerator unit and transversely across the plurality of tubular sections comprising the combustion chamber.

3,706,534

MIXING NOZZLE FOR GASES

Cornelis M. Verheul, Amsterdam, Netherlands, and Charles V. Sternling, Walnut Creek, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Nov. 3, 1970, Ser. No. 86,431
Int. Cl. C07d 1/06; B01j 1/00
U.S. Cl. 23—284 **6 Claims**



Intimate mixing of two gaseous streams is effected in an apparatus which comprises a casing containing (a) at one end, a first inlet for the introduction of the first gaseous stream; (b) a second inlet in the side of the casing downstream from the first inlet, through which the second gaseous stream is admitted; (c) an outlet downstream of the second inlet; (d) an imperforate partition positioned between the first and second inlets; (e) at least one perforated partition positioned between the second inlet and the outlet; and (f) a number of tubes, supported by and passing through at one end, the imperforate partition, and at the other end, said perforated partition.

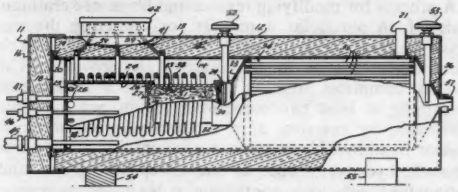
3,706,535

CARBON MONOXIDE BURNER FOR UNDERSEA HABITATS

Lawrence B. Taylor; Raymond L. Bentz, and Robert B. Porter, all of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 23, 1970, Ser. No. 92,097
Int. Cl. B01j 9/04
U.S. Cl. 23—288 J **11 Claims**

Disclosed herewith is a burner system for removing carbon monoxide and other spurious impurities from gaseous atmospheres intended to be breathed by human beings while they are living and working in enclosed pressurized chambers or habitats located undersea or within other environments requiring life-support equipment. Included therein is a burner a burner system is disclosed as having a boiler-tube type heat exchanger for preheating the gaseous atmospheres supplied thereto for purification and for cooling the purified portions thereof immediately prior to their being exhausted into the habitat thereby. An atmospheric gas conduction passageway is operatively associated with said heat exchanger, and a compartment containing an oxidizing catalyst is disposed with respect thereto, so as to receive the atmospheric gas flowing through said passageway and supply it to the cooling portion of said heat exchanger. A heater is disposed for simultaneously heating said passageway and said catalyst, and a thermally insulated housing encapsulates all of the aforesaid components in order to contain them as a unit that is suitable for being located within said habitat. An instrumented temperature control system is also employed to sense and control the temperature of said passageway, and a blower is employed to supply the atmospheric gas to be purified to said burner at quantities and pressures required for any given operational circumstances.

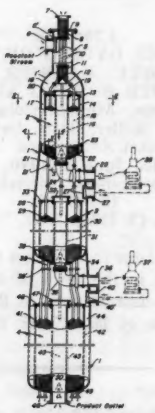


3,706,536

MULTIPLE-STAGE STACKED REACTOR SYSTEM FOR MOVING BED CATALYST PARTICLES

Arthur R. Greenwood, Niles, Walter W. Heinze, Chicago, Edward Schnitta, Bensenville, and David M. Boyd, Clarendon Hills, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

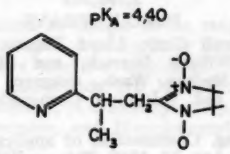
Filed May 10, 1971, Ser. No. 141,514
Int. Cl. B01j 9/12
U.S. Cl. 23—288 G **9 Claims**



A plurality of superposed reactor sections, with each having an annular-form catalyst section, are provided within a partitioned vertically elongated chamber such that catalyst particles can readily move by gravity from the upper section down through the lowermost section. Uniformly spaced apart small diameter catalyst transfer conduits provide for the downward movement of catalyst into and out of the chamber, as well as between adjacent sections in a manner to substantially preclude reactant stream flow between reactor sections through such conduits. Also, a preferred construction utilizes special flat

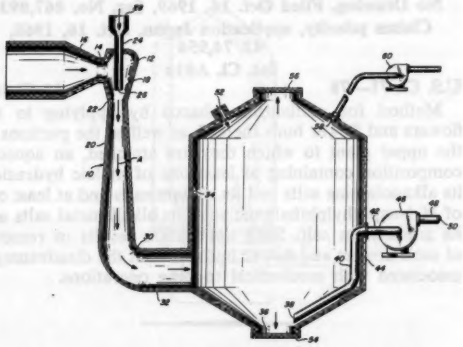
faced, wedge-wire, to form the screening for retaining the catalyst in the annular-form catalyst zones and the flat-faced wires forming the screening are positioned vertically such that downwardly moving catalyst will not have to rub over a rough surface and be subjected to attrition.

3,706,537
FREE RADICAL pH INDICATORS
Jan Becher, Grindlose, Denmark, and Edwin F. Ullman, Atherton, Calif., assignors to Synvar Associates, Palo Alto, Calif.
Continuation-in-part of abandoned application Ser. No. 794,008, Jan. 27, 1969. This application Feb. 22, 1971, Ser. No. 117,669
Int. Cl. G01n *21/08, 33/16*
U.S. Cl. 23—230 R 5 Claims



Acidity determinations are made from variations in electron spin resonance (ESR) spectra with compounds having an asymmetric center bonded through a methylene group to an organic functionality having an unpaired electron. Accurate determination of acidity can be made by comparing the spectrum of the sample being measured to a standard.

3,706,538
SMOKE ABATEMENT APPARATUS
Frank D. Chew, 4320 N. 63rd Ave., Phoenix, Ariz. 85033
Filed Dec. 23, 1970, Ser. No. 101,038
Int. Cl. B01j *1/20, 1/00;* B01d *47/10*
U.S. Cl. 23—284 4 Claims



A smoke abatement apparatus and method wherein smoke is introduced into the inlet of a converging diverging venturi while a nozzle emits a high velocity jet stream of wetting fluid into the converging inlet of said venturi to aspirate and scrub said smoke for emulsifying it during passage through said venturi; and wherein a tank communicates with the diverging outlet of said venturi to collect emulsified materials from said smoke; said venturi and said tank being provided with a lead interior to resist corrosive elements of said smoke; said apparatus also including means for admitting acidic or base materials, together with a foaming agent into said tank, for reaction with said base or acid materials of said smoke, said foaming agent also tending to collect non-condensables and/or non-soluble material from said smoke; exhaust pump means for removing said non-condensable and non-soluble materials from said tank; and another means adapted and disposed for pumping emulsified material and fluid from a lower sump portion of said tank.

3,706,539
TANTALUM CLAD NIOBIUM
Melvin A. Hagan, 6961 Crest Rd., Palos Verdes Peninsula, and Roy I. Batista, 509 Avenida Mirola, Palos Verdes Estates, both of Calif.
Continuation-in-part of Ser. No. 809,039, March 20, 1969, Pat. No. 3,579,808. This application Aug. 5, 1970, Ser. No. 61,459
Int. Cl. B32b *15/00*
U.S. Cl. 29—195 2 Claims

A composite metal article is made by applying tantalum metal sheet to the surface of niobium metal and the two metals are diffusion bonded in a protective environment. The bonded metals may be cold worked to produce the final fabricated article. The final article is coated with an aluminide or a silicide coating.

3,706,540
ARTIFICIAL FUEL LOG MACHINE
Milton W. Stanton, Route 2, Orofino, Idaho
Filed Aug. 31, 1970, Ser. No. 68,436
Int. Cl. C10l *5/22;* B30b *11/00*
U.S. Cl. 44—2 6 Claims

An apparatus for forming compressed fuel logs from shredded waste paper impregnated with oil. The apparatus includes an upwardly open receiving chamber within which a charge of partially compressed material is received, the material being directed to the receiving chamber by an upright chute. A lateral compression ram moves the charged material from the receiving chamber to a compression chamber and reduces the width of the charge. The perpendicular compression ram reduces the length of the charge within the compression chamber. The finished log is discharged through a release door in the compression chamber during retraction of the two rams.

3,706,541
ANTIKNOCK LIQUID HYDROCARBON FUEL CONTAINING ORGANIC NITROGEN CONTAINING COMPOUNDS
Stamoulis Stournas, Trenton, El-Ahmadi I. Heiba, Princeton, and Ralph M. Dessau, Highland Park, N.J., assignors to Mobil Oil Corporation
No Drawing. Filed July 23, 1971, Ser. No. 165,709
Int. Cl. C10l *1/22*
U.S. Cl. 44—63 13 Claims

Liquid hydrocarbon fuels are provided whose antiknock properties are improved by adding thereto a small amount of an aminofulvene.

3,706,542
FUEL GAS FOR CUTTING OPERATIONS
James Harris Gilks, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Oct. 13, 1970, Ser. No. 80,470
Int. Cl. B23k *7/00;* C10l *3/00*
U.S. Cl. 48—197 FM 5 Claims

A fuel gas containing low molecular weight hydrocarbons and being substantially free of hydrocarbons containing more than 4 carbon atoms and including proportions, on volume bases, of methyl acetylene and/or allene within the range of from 5 to 39%, propylene within the range of from 30 to 90%, and propane within the range of from 0 to 30%.

3,706,543

METHOD FOR PRODUCING TUBULAR RADIOACTIVE LIGHT SOURCES

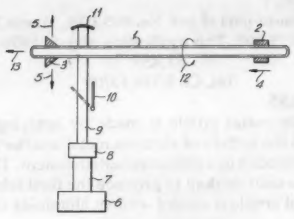
Oscar Thuler, Bern, Switzerland, assignor to Canrad Precision Industries, Inc., New York, N.Y.

Filed June 11, 1969, Ser. No. 832,273

Claims priority, application Switzerland, Aug. 22, 1968, 12639/68

Int. Cl. C03b *21/06*

U.S. Cl. 65—105 6 Claims



According to the invention, the process for making tube-shaped, radioactive light sources is characterized by the fact that a glass tube containing a Luminophor and a radioactive gas, is subdivided successively into glass tube sections intended for use as radioactive light sources, by means of a laser beam. This is accomplished with a closely localized lazer beam so that a sufficient quantity of glass is drawn from the sidewalls to form end walls, to devide the sealed tube and simultaneously seal the ends of the two tubes produced without loss of radioactive gas therein.

3,706,544

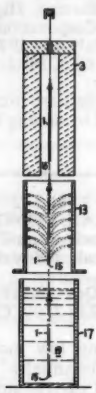
METHOD OF LIQUID QUENCHING OF GLASS SHEETS

Edmund R. Michalik, West Mifflin, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 19, 1971, Ser. No. 163,878

Int. Cl. C03b *27/00*

U.S. Cl. 65—116 11 Claims



An improved method for thermally tempering glass sheet by liquid quenching is disclosed. The improvement comprises a preliminary strengthening of the marginal edges of the glass sheet such that the glass sheet is better able to withstand the subsequent thermal shock of liquid quenching. The preliminary strengthening is accomplished by cooling the body of the glass sheet between marginal edges at a rate greater than the rate at which the edges are cooled. This minimizes the tensile stresses that are normally associated with the edges during liquid quenching.

In a preferred embodiment, the invention is directed to an improvement in the dip-quenching process for thermally tempering glass in which the edge which initially contacts the quenching liquid is put in compression prior to immersing the glass in the quenching liquid.

3,706,545

FOLIAR SPRAYS

Kenneth Russell Gray, Lloyd Eugene Van Blaricom, Franklin Willard Herrick, and Harvey Rudolph Deweyert, Shelton, Wash., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 818,823, Apr. 23, 1969. This application Aug. 27, 1970, Ser. No. 67,598

Int. Cl. C05f *11/00*

U.S. Cl. 71—1 37 Claims

Foliar sprays are provided for overcoming iron deficiency in iron chlorotic tropical and sub-tropical evergreen trees. The sprays comprise non-toxic, water soluble polyols, ethers of these polyols and mixtures thereof in conjunction with organic iron sources.

3,706,546

METHOD OF CULTIVATING TOBACCO AND AQUEOUS SOLUTION TO BE USED THEREFOR

Shiro Higase, Hatanò-shi, Japan, assignor to Ishihara Sangyo Kaisha, Ltd., Nishi-ku, Osaka, and The Japan Monopoly Corp., Minato-ku, Tokyo, Japan

No Drawing. Filed Oct. 16, 1969, Ser. No. 867,093

Claims priority, application Japan, Oct. 16, 1968, 43/74,954

Int. Cl. A01n

U.S. Cl. 71—78 11 Claims

Method for cultivating tobacco by applying to the flowers and flower buds thereof, as well as the portions of the upper plant to which they are attached, an aqueous composition containing at least one of maleic hydrazide, its alkanolamine salts and its sodium salts and at least one of N-1-naphthylphthalamic acid, its alkali metal salts and its ammonium salt. Such application results in removal of such flowers and flower buds without the disadvantages associated with mechanical topping operations.

3,706,547

COMBATING WEEDS WITH THIENYL THIOCYANATES

Natu R. Patel, Shawnee Mission, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Sept. 14, 1970, Ser. No. 72,189

Int. Cl. A01n *9/18*

U.S. Cl. 71—90 2 Claims

5 - chloro- and 5 - methyl - 2 - thienyl thiocyanates, made by reaction of the corresponding substituted thiophenes with thiocyanogen, are useful as post-emergent herbicides, particularly to combat such undesired vegetation as pigweed and wild mustard.

3,706,548

N-CYCLOALKYL-2,3,6-TRICHLOROBENZYLIDENEIMINES AND THEIR USE AS HERBICIDES

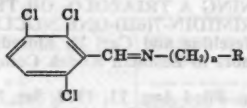
Edmund J. Rumanowski, Dover, N.J., assignor to Tenneco Chemicals Inc.

No Drawing. Original application Oct. 18, 1967, Ser. No. 676,052, now Patent No. 3,637,851, dated Jan. 25, 1972. Divided and this application Sept. 23, 1970, Ser. No. 74,903

Int. Cl. H01n *9/206*

U.S. Cl. 71—121 20 Claims

Compounds having the structural formula



wherein *n* represents an integer in the range of zero to four and R represents a monocyclic or bicyclic aliphatic group are effective selective herbicides. Illustrative of these herbicidal compounds are N-cyclohexyl-2,3,6-trichlorobenzylideneimine, N-cyclohexylmethyl - 2,3,6 - trichlorobenzylideneimine, and N-cycloheptyl-2,3,6-trichlorobenzylideneimine.

3,706,549

METHOD FOR REFINING PIG-IRON INTO STEEL

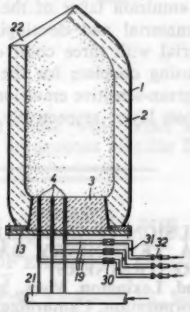
Helmut Knuppel, Sulzbach-Rosenberg, Karl Brotzmann, Sulzbach-Rosenberg Hutte, and Hans-Georg Fassbinder, Sulzbach-Rosenberg, Germany, and Guy Savard and Robert Lee, Montreal, Quebec, Canada, assignors to Eisenwerk-Gesellschaft Maximilianshutte m.b.H., Sulzbach-Rosenberg Hutte, Germany

Filed Feb. 20, 1969, Ser. No. 800,892

Claims priority, application Germany, Feb. 24, 1968, P 15 83 968.6; Aug. 13, 1968, P 17 58 816.8; Jan. 14, 1969, P 19 01 563.5; Jan. 30, 1969, P 19 04 382.4, P 19 04 383.5

Int. Cl. C21c *5/34*

U.S. Cl. 75—60 16 Claims



Pig-iron is refined into steel by blowing oxygen and a protective screen of an encasing gas through injecting means located at or near the bottom of a converter containing a melt of molten metal. The encasing gas while protecting the injecting means, allows it to be consumed at substantially the same rate as the bottom of the converter so that the injecting means is not left projecting from the bottom of the converter. Desirably, the oxygen jet is circular in cross-section and the encasing gas is in the form of a concentric jet.

A converter for carrying out the method is made up of a pear-shaped sheet-steel casing having a refractory lining and an inserted bottom provided with nozzles in the form of metal tubes for the oxygen and encasing gas. Preferably, a substantial portion (for example about half) of the converter bottom is free of nozzles. The nozzles can be arranged in groups and there can be rows running parallel with the tilting axis of the converter. The nozzles may also be arranged to cause circulation of the molten metal in the converter. The nozzles can be constructed to provide for swirling movement of the encasing gas. Examples of encasing gas which may be used are furnace-mouth gas, coke-oven gas, natural gas and other gases containing hydrocarbons.

3,706,550

METHOD FOR PRODUCING A METAL DIE OR MOLD

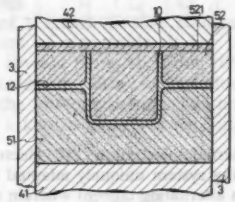
Hanji Umehara; Takashi Kimura, and Hiroshi Hamamoto, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyoto Chuo Kenkyusha, Nagoya-shi, Aichi-ken, Japan

Filed Sept. 15, 1970, Ser. No. 72,380

Claims priority, application Japan, Sept. 22, 1969, 44/75691

Int. Cl. B22f *3/26*

U.S. Cl. 75—200 23 Claims



A method for producing a metal die or mold including the steps of placing a layer of sintering powder, such as iron, copper, tungsten carbide or titanium carbide, in a frame or box, placing in contact with the sintering powder a pattern made of an infiltrant metal, such as copper, lead, cobalt, nickel, iron or alloys thereof, having a lower melting point than that of the sintering powder, the pattern corresponding in configuration to that of the cavity surface of the desired die, heating the powder together with the pattern in the frame to sintering temperature, whereby to sinter the powder and infiltrate the infiltrant metal forming the pattern into the powder, and cooling so as to obtain a hardened sintered mold having a surface whose configuration complements that of the pattern surface.

3,706,551

ELECTROCONDUCTIZED ORGANIC INSULATING MATERIAL

Shinichiro Nagashima and Kaichi Tsuchiya, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1970, Ser. No. 22,789

Claims priority, application Japan, Mar. 27, 1969, 44/23,365; Mar. 28, 1969, 44/23,616, 44/23,617; Apr. 1, 1969, 44/24,686

Int. Cl. G03g *5/09*

U.S. Cl. 96—1.5 3 Claims

An organic insulating material, e.g. film, is exposed to a radiation of a wave length below 4000 A. to impart an

increased electroconductivity to the surface. The resulting organic insulating material having the electrostatically electroconductized layer is useful for preparing a photosensitive member suitable for electrophotography.

3,706,552

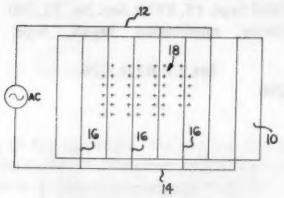
ELECTRODE CONFIGURATION FOR AC PIP ELECTROPHOTOGRAPHY

John D. Grier, Temperance, Mich., and Maclin S. Hall, Okemos, Mich., assignors to Owens-Illinois, Inc.

Division of Ser. No. 812,275, April 1, 1969. This application Dec. 28, 1970, Ser. No. 101,764

Int. Cl. G03g *17/00, 13/22*

U.S. Cl. 96—1.4 2 Claims



A persistent internal polarization (PIP) electrophotography printing or copying system uniquely adapted to be used in combination with alternating current wherein a pair of electrodes, each including a plurality of elements disposed in spaced array alternating with each other in the same plane, are utilized in combination with a PIP layer such that an alternating current electric field may be simultaneously applied to the PIP layer while permitting light radiation to reach the PIP layer. In the specific practice, the pair of electrodes are positioned on top of or embedded in the surface of the PIP layer which is to be toned; that is, the top surface.

3,706,553

TRANSFER OF IMAGES TO A NONCONDUCTIVE SUBSTRATE

Elsie L. Menz, 22 Palisade Park, Rochester, N.Y. 14620

Filed Dec. 22, 1969, Ser. No. 886,838

Int. Cl. G03g *13/22*

U.S. Cl. 96—1.4 9 Claims

A method of transferring insulating image material containing a static charge from an image bearing surface to an electrically non-conductive image receiving surface by means of coulombic attraction and the rearrangement of electrical charges.

3,706,554

PHOTOCONDUCTIVE COMPOSITION

Charles J. Fox and William A. Light, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 24, 1971, Ser. No. 127,822

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.6 9 Claims

High-speed heterogeneous photoconductive compositions are provided which contain tritolylamine photoconductor in a polymeric binder material which contains a particulate discontinuous phase containing a combination of a pyrylium dye and a polymeric material having an alkylidene diarylene moiety in a recurring unit. These compositions are suitable for the formation of electrophotographic elements which can be prepared by forming said compositions on a suitable conductive support.

3,706,555

ORGANIC PHOTOCONDUCTORS SPECTRALLY SENSITIZED WITH MEROCYANINE DYES CONTAINING A TRIAZOLO- OR TETRAZOLO-[1,5-a]PYRIMIDIN-7(6H)-ONE NUCLEUS

Donald W. Heseltine and Carl H. Eldredge, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 11, 1971, Ser. No. 170,972

Int. Cl. G03g *5/02, 5/06*

U.S. Cl. 96—1.6 21 Claims

Organic photoconductors are spectrally sensitized with merocyanine dyes which feature a triazolo- or tetrazolo [1,5-a]pyrimidin-7(6H)-one nucleus.

3,706,556

METHOD FOR PREVENTING COLOR MIXING IN MULTIPLE LAYER-TYPE REVERSAL COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Tadashi Nagae, Yasushi Oishi, and Jun Hayashi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed July 17, 1970, Ser. No. 56,006

Claims priority, application Japan, July 17, 1969, 44/56,670

Int. Cl. G03c *7/16*

U.S. Cl. 96—22 6 Claims

A method for preventing color mixing in a coupler-in-developer type multiple layer reversal color photographic light-sensitive material having coated on a support a red-sensitive emulsion layer, a green-sensitive emulsion layer, and a blue-sensitive emulsion layer, comprising incorporating at least one diffusion resistant magenta coupler in a green-sensitive emulsion layer of the color photographic light-sensitive material and developing said color photographic material with three color developing solutions containing diffusing couplers for the red-sensitive emulsion layer, the green-sensitive emulsion layer and the blue-sensitive emulsion layer, respectively, is disclosed.

3,706,557

COLOR DIFFUSION TRANSFER FILM UNIT CONTAINING A TEMPORARY BARRIER FOR DEVELOPER RESTRAINERS

Lester H. Arond, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

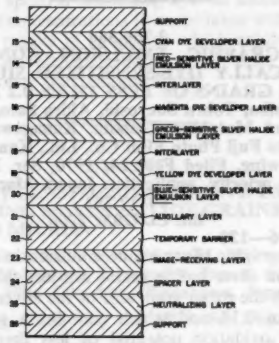
Continuation-in-part of application Ser. No. 99,544, Dec. 18, 1970. This application Apr. 28, 1971, Ser. No. 138,237

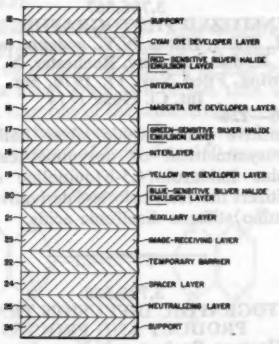
Int. Cl. G03c *1/40, 5/48, 7/00*

U.S. Cl. 96—29 D 39 Claims

Film units including a negative component containing at least one light-sensitive silver halide layer and associated dye image-providing material and a positive component containing at least a dyeable stratum, the positive component further including a development restrainer disposed in the dyeable stratum and/or in an associated layer, particularly such film units adapted for forming color transfer images viewable without separation, wherein a layer is disposed between the development restrainer and the negative component, which layer is so constituted

as to prevent substantial migration of the development restrainer to the negative component during the shelf





life of the film but which will permit such migration upon application of an aqueous alkaline fluid.

3,706,558

PHOTOGRAPHIC METHOD FOR PRINTING VIEWING SCREEN STRUCTURE INCLUDING TREATMENT OF EXPOSED COATING BEFORE DEVELOPMENT

Harry Robert Frey, Lancaster, Pa., assignor to RCA Corporation

No Drawing. Filed Mar. 25, 1971, Ser. No. 128,193
Int. Cl. G03c *5/04*
U.S. Cl. 96—27 E **10 Claims**

Photographic method comprises (a) applying to a supporting surface for a viewing-screen structure a coating comprised of an organic binder and a dichromate photosensitizer for the binder, (b) exposing the coating to a pattern of actinic radiation, at least a portion of said coating being underexposed after completion of exposure, (c) wetting the exposed coating with a dilute aqueous solution of a mild reducing agent, such as hydroquinone, (d) and flushing the wet coating with an aqueous solvent to remove the unexposed portions of the coating while retaining the underexposed portions of the coating in place.

3,706,559

METHODS FOR MAKING POSITIVE FULL-COLOR DYE-TRANSFER PRINTS

Robert H. Sprague, Chelmsford, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Feb. 27, 1969, Ser. No. 802,954
Int. Cl. G03c *5/24*
U.S. Cl. 96—48 PD **9 Claims**

Methods are disclosed for making positive full-color dye-transfer prints by imagewise exposure, to a color negative, of photographic imaging media comprising a finely-divided photoconductor as the photosensitive agent. The exposed imaging media are developed, in the presence of a reducible metal ion, with couplers and developers forming cyan, magenta, or yellow dye images in radiation-exposed portions thereof. These dye images combine to reproduce the original image in a full-color print.

3,706,560

IMAGE RECORDING MATERIAL CONTAINING TITANIUM DIOXIDE, AND ZINC OXIDE IN MINOR AMOUNT AND THE USE THEREOF

Clark F. Grain, Framingham, Mass., assignor to Itek Corporation, Lexington, Mass.

No Drawing. Filed July 21, 1970, Ser. No. 56,944
Int. Cl. G03c *5/24, 1/00*
U.S. Cl. 96—48 **21 Claims**

An improved titanium dioxide photoreceptor includes a minor amount of zinc oxide. It has been found that preferably an amount of up to about 10% zinc oxide in a titanium dioxide or other photoconductor layer more than doubles the photosensitivity. The improved layer is well suited to a known photolytically initiated process.

3,706,561

COMPOSITIONS FOR MAKING BLIXES

Rowland G. Mowrey and Keith H. Stephen, Rochester, and Eugene F. Wolfarth, Pittsford, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 23, 1970, Ser. No. 23,022
Int. Cl. G03c *5/32, 5/38*
U.S. Cl. 96—60 BF **14 Claims**

Compositions containing a sufficient amount of (a) a water-soluble complex of a ferric ion with a pentadentate or a hexadentate primary ligand to produce, when dissolved in water, a solution containing from about 0.4 mole/liter to about 2.0 moles/liter and (b) a sufficient amount of a water-soluble monodentate secondary ligand, such as, a thiocyanate, a borate, boric acid, a fluoride or a thiourea so that the mole ratio of the thiocyante to (a) is at least 5:1, the mole ratio of the borate, boric acid or fluoride to (a) is at least 1:1 and the mole ratio of the thiourea to (a) is at least 3:1 are advantageously used to prepare blix solutions for removing silver and silver halide in color-developed photographic processing.

3,706,562

PHOTOGRAPHIC MATERIALS AND PROCESSES FOR DEVELOPING PHOTOGRAPHIC COMPOSITIONS

Arthur H. Herz, Donald M. Burness, and Edward J. Seus, all % Eastman Kodak Company, Rochester, N.Y. 14650

No Drawing. Continuation of abandoned application Ser. No. 671,998, Oct. 2, 1967. This application Apr. 26, 1971, Ser. No. 137,614
Int. Cl. G03c *5/30*
U.S. Cl. 96—66.3 **22 Claims**

Photographic compositions and elements comprising a zwitterionic compound and a cationic and/or a non-ionic development modifier. In one aspect, this invention relates to a process comprising developing a photographic image in the presence of a zwitterionic compound and a

cationic or a non-ionic development modifier. In another aspect, this invention relates to a photographic developer composition comprising a photographic developing agent, a zwitterionic compound, and a cationic or a non-ionic development modifier.

3,706,563

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Rintaro Ushiyama, Hachioji-shi, Tokyo; Osakazu Sugino, Machida-shi, Tokyo; Shui Sato, Hachioji-shi, Tokyo; Eiichi Sakamoto, Hanno-shi, Saitama-ken; Hiroshi Yamada, and Shoji Kikuchi, both of Hachioji-shi, Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

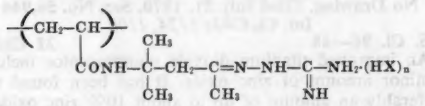
Filed March 19, 1971, Ser. No. 126,327

Claims priority, application Japan, March 20, 1970, 45/23142

Int. Cl. G03c *1/84*

U.S. Cl. 96—84 A 3 Claims

A new polymer compound having the guanidyketimine structural unit of the formula



wherein X is an acid radical and *n* is 1 or 2 has been synthesized. The said compound is useful as a mordant in a light-sensitive silver halide photographic material in order to prevent undesired migration of an acidic dye contained in a certain layer of the said photographic material. This greatly enhances sharpness to the image obtained from the said photographic material.

3,706,564

PROCESS FOR FORMING SILVER HALIDE CRYSTALS IN THE PRESENCE OF AMPHIPHILIC COPOLYMERS

Kenneth Robert Hollister, Pittsford, Ernest John Perry, Rochester, and Glen Marshall Dappen, Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,920

Int. Cl. G03c *1/04*

U.S. Cl. 96—114 6 Claims

Copolymers are disclosed which are soluble in aqueous media, as well as in organic solvents. In one aspect, these polymers comprise (1) units of (N,N-dialkylamino)alkyl acrylates and (2) units of alkyl acrylates. In another aspect, silver halide grains are formed in the presence of amphiphilic polymers in an aqueous medium, coagulated and then redispersed in an organic solvent for coating on a support.

3,706,565

PHOTOGRAPHIC COMPOSITIONS CONTAINING AN ADMIXTURE OF ORGANIC AND INORGANIC SILVER SALTS

Ronald Harris Ericson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,924

Int. Cl. G03c *1/04, 1/72*

U.S. Cl. 96—114 8 Claims

Photographic compositions are disclosed which comprise an admixture of an organic silver salt and an inorganic silver salt wherein the crystals of said inorganic silver salt have been formed in the presence of an amphiphilic copolymeric silver halide peptizer. In certain embodiments, the amphiphilic copolymer comprises units of a (N,N-dialkylamino)alkyl acrylate. In another aspect, a process is disclosed for forming a photographic composition which comprises (1) forming inorganic silver salt crystals in a liquid medium in the presence of an amphiphilic copolymer which is a silver halide peptizer and (2) mixing said inorganic silver salt crystals with an organic silver salt in an organic liquid medium.

3,706,566

PHOTOGRAPHIC EMULSION CONTAINING OPTICALLY DYE-SENSITIZED SILVER HALIDE GRAINS OF LESS THAN 0.2 MICRON

Keisuke Shiba, Tohru Sueyoshi, Akira Sato, Seiiti Kubodera, and Motohiko Tsubota, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,774

Claims priority, application Japan, Mar. 7, 1969, 44/17,261

Int. Cl. G03c *1/08*

U.S. Cl. 96—120 12 Claims

A photographic silver halide emulsion in which at least 95% of the silver halide grains are less than 0.2 micron or in which the mean grain size of the silver halide grains is less than 0.18 and which contains a sensitizing dye having an oxidation potential of less than 0.90 volt is disclosed.

3,706,567

SUPERSENSITIZED PHOTOGRAPHIC EMULSIONS

Gary L. Hiller, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 17, 1970, Ser. No. 90,435

Int. Cl. G03c *1/14*

U.S. Cl. 96—126 6 Claims

Light-sensitive photographic silver halide emulsions containing symmetrical or unsymmetrical cyanine or mercocyanine imidazolo[4,5-b]quinoline dyes, and as super-sensitizers therefor, colorless derivatives of bis(s-triazin-2-ylamino)stilbene disulfonic acids.

3,706,568

PHOTOGRAPHIC DIFFUSION TRANSFER PRODUCT AND PROCESS

John A. Haefner, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 6, 1971, Ser. No. 131,835

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 R 17 Claims

A receiving sheet for use in a diffusion transfer process comprises a support having an image receiving layer and having between the support and receiving layer, a layer comprising colloidal size inorganic particulate material such as silica, alumina, etc. The image receiving layer can be a nucleated layer for use in black and white diffusion transfer.

3,706,569

SILVER HALIDE EMULSION CONTAINING SILVER ETHYNYLCYCLOPENTANOL COMPLEX TO REDUCE DESENSITIZATION OF OPTICAL SENSITIZING DYE INCORPORATED THEREIN

Paul B. Gilman, Jr., and Jon D. Bass, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Dec. 4, 1970, Ser. No. 95,420

Int. Cl. G03c *1/08*

U.S. Cl. 96—134 R 11 Claims

Light-sensitive photographic silver halide emulsions are provided which contain (1) a photographic spectral sensitizing dye having a polarographic cathodic halfwave potential more positive than about −1.80 volts, said dye being employed in the emulsion at a concentration which results in at least about 0.3 log *E* desensitization of a test portion of the emulsion, when the test portion of the emulsion is coated on a support, sensitometrically ex-

posed and developed for 6 minutes at 20° C. in Kodak D–19 developer; and (2) an organic silver complex in an amount effective to reduce the desensitization caused by the spectral sensitizing dye. Photographic emulsions in accordance with this invention exhibit higher speeds in the spectrally sensitized region (i.e., higher minus blue speeds) than prior art emulsions containing lower concentrations of spectral sensitizing dye. In addition, use of the higher dye concentrations in accordance with the present invention results in emulsions which exhibit sensitivity to longer wavelength radiation than prior art emulsions having lower dye concentrations.

3,706,570

SPECTRALLY SENSITIZED NEGATIVE EMULSION CONTAINING SILVER HALIDE GRAINS OF LESS THAN 0.18 MICRON

Yoshiyuki Nakazawa, Tohru Sueyoshi, Akira Sato, and Yashiharu Nakamura, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed May 18, 1970, Ser. No. 38,485

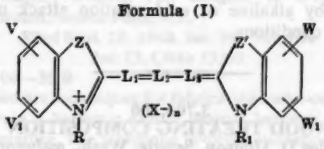
Claims priority, application Japan, May 17, 1969. 44/38,248

Int. Cl. G03c *1/18*

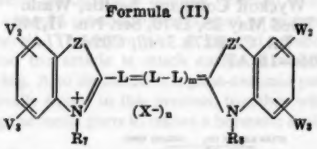
U.S. Cl. 96—137 10 Claims

A silver halide photographic light-sensitive emulsion wherein the silver halide crystals have a mean grain size of less than 0.18 micron, or wherein at least 95% of the crystals have a mean grain size of less than 0.2 micron and wherein at least one of the sensitizing dyes represented by the following formulae are incorporated in such an emulsion in an amount of from 1 to 150 mg. per 1 kg. of the emulsion:

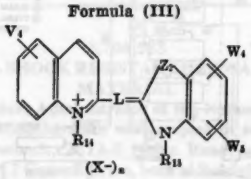
Formula (I)



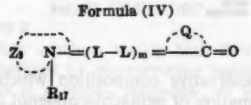
Formula (II)



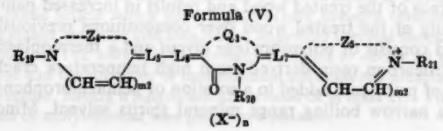
Formula (III)



Formula (IV)



Formula (V)



3,706,571

BLOOD SEPARATION PROCESS

Emmanuel J. Dufault, Pittsford, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed July 20, 1970, Ser. No. 56,428

Int. Cl. A23j *1/06;* A23k *1/04*

U.S. Cl. 99—21 9 Claims

A continuous process for coagulating and separating blood solids from a liquid. The liquid is passed under pressure through a vessel in which the liquid is heated by steam injection to a temperature above about 190° F. but below its boiling point. The heated liquid is retained under pressure in the vessel for at least five seconds and then is discharged through a pressure reducer to a separator wherein the coagulated blood solids are extracted from the liquid.

3,706,572

PROCESS FOR AGGREGATING PRELIGHTENED COFFEE COMPOSITIONS

William J. Einstman, Port Chester, and George B. Ponzoni, Spring Valley, N.Y., and Richard J. Leonard, Wayne, N.J., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Aug. 19, 1970, Ser. No. 65,344

Int. Cl. A23f *1/08*

U.S. Cl. 99—71 5 Claims

Prelightened, soluble coffee agglomerates are prepared by grinding powder comprising soluble coffee solids and coffee lightener solids to a particle size between about 90 microns and 150 microns and then agglomerating the ground powder. The coffee products produced in this manner have both a commercially acceptable appearance in glass jars and a good brew appearance in the cupped beverage.

3,706,573

FRIED RICE PRODUCT AND PROCESS FOR PRODUCING SAME

Raymond C. Tolson, Sr., Napa, and Raymond C. Tolson, Jr., Woodland, Calif., assignors to G.T. Products, Inc., Woodland, Calif.

No Drawing. Filed June 24, 1970, Ser. No. 49,507

Int. Cl. A23l *1/10, 1/18*

U.S. Cl. 99—80 R 5 Claims

A fried rice food product is produced by feeding raw rice into a hot (350–420° F.) oil bath. The rice is fried therein for a period of from 5 to 20 seconds after which the rice is immediately removed from the hot oil bath and the excess oil adhering to the rice grains is drained therefrom while the rice cools to room temperature.

3,706,574

ROASTING OF SUBDIVIDED COFFEE BEANS

James P. Mahlmann, Wayne, N.J., and Joseph F. Coogan III, Tarrytown, and Gene Alfred Mazzaferro, Richmond Hill, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Mar. 18, 1970, Ser. No. 20,796

Int. Cl. A23f *1/02, 1/10*

U.S. Cl. 99—69 4 Claims

Blends of green coffee beans are subdivided to permit roasting by conventional means to produce flavors substantially the same as those of blends of whole roasted beans. The subdivided green beans may be decaffeinated prior to roasting.

3,706,575

LACTALBUMIN PHOSPHATE AS A REPLACEMENT FOR EGG WHITE

Sharon Ann Broadhead, nee Rulon, Rye, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 606,029, Dec. 30, 1966. This application Sept. 9, 1969, Ser. No. 856,476

Int. Cl. A23j *3/02*

U.S. Cl. 99—114 29 Claims

Undenatured lactalbumin phosphate has been found to be an effective low cost replacement for egg white in food compositions partially or totally. Particular compositions useful in food formulations include egg white and undenatured lactalbumin phosphate, sugar and lactalbumin phosphate and food formulations normally containing egg white in which all or a portion of the egg white has been replaced by lactalbumin phosphate.

3,706,576

PROCESS FOR PREPARING EDIBLE FAT COMPOSITIONS CONTAINING TRIGLYCERIDES DERIVED FROM C_{16}, C_{18}, C_{20}, AND C_{22} FATTY ACIDS

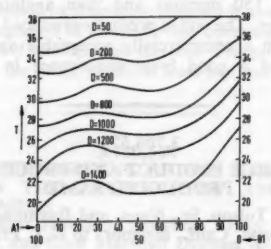
Brian Leonard Caverly, Meopham, and John Barry Rossell, St. Albans, England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of abandoned application Ser. No. 775,728, Nov. 14, 1968. This application Aug. 9, 1971, Ser. No. 170,382

Claims priority, application Great Britain, Nov. 20, 1967, 52,780/67

Int. Cl. A23d *5/00*

U.S. Cl. 99—118 R 14 Claims



An edible unrandomised fat blend prepared from hardened oils and containing from 10 to 50% of a component A whose triglycerides have a C_{16} and C_{18} acid content of at least 90%, of which from 10 to 45% is saturated acid, and from 50 to 90% of a component B whose triglycerides have a C_{20} and C_{22} acid content of from 30 to 75% and not more than 20% saturated acid, both components having a C_{18} monoethenoic radical in at least 85% of the glyceride 2-positions and a trans index of between 40 and 75, shows interaction of the components resulting in improvement of melting characteristics which make the blend suitable as a replacement for lauric fats.

3,706,577

SULFUR-CONTAINING FLAVORING COMPOSITIONS AND PROCESSES THEREFOR

Ira Katz, Elberon, William John Evers, Long Branch, and Christopher Giacino, Califon, N.J., assignors to International Flavors and Fragrances, Inc.

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,148

Int. Cl. A23l *1/22, 1/26*

U.S. Cl. 99—140 R 14 Claims

Foodstuff, flavor augmenting and flavor imparting compositions are provided containing a quantity of bis-(thienyl) sulfide sufficient to alter the organoleptic characteristics of said composition.

3,706,578

ALL-RAPESEED OIL SHORTENINGS

Patrick J. Bence, Hamilton, Ontario, Canada, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sept. 30, 1970, Ser. No. 77,007

Int. Cl. A23d *5/00*

U.S. Cl. 99—118 R 8 Claims

A stable rapeseed oil shortening based on a blend of separately hydrogenated hardstock and softstock. The hardstock has an iodine value within the range of 0 to 20, and the softstock has an iodine value of at least 85. Because the shortening is crystallized in the beta polymorphic phase, it is stable over a wide range of temperatures.

ERRATUM

For Class 106—178 see:
Patent No. 3,706,700

3,706,579

CERMET PROTECTIVE COATING

Harold J. Michael, Columbus, Ohio, assignor to North American Rockwell Corporation

No Drawing. Continuation-in-part of application Ser. No. 833,698, June 16, 1969. This application Sept. 4, 1970, Ser. No. 69,914

Int. Cl. C03c *5/00*

U.S. Cl. 106—1 10 Claims

A novel protective coating composition for application to metals by firing in an oxidizing environment at a temperature in the general range of 1250° F. to 1600° F., and essentially consisting of aluminum, a special mill addition having both refractory compound and reducible compound constituents, and a special homogeneous glass frit, obtains improved resistance of the metals to weathering and to corrosion by alkaline or acid solution attack under atmospheric conditions.

3,706,580

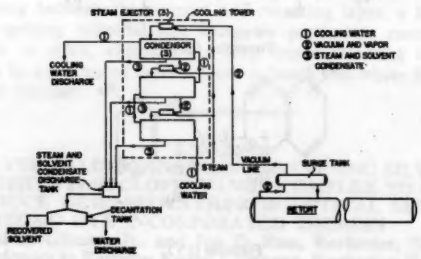
WOOD TREATING COMPOSITION

Charles D. Hudson, Seattle, Wash., assignor to Wyckoff Company, Seattle, Wash.

Filed May 25, 1970, Ser. No. 41,140

Int. Cl. B27k *3/40;* C09d *5/14*

U.S. Cl. 106—15 AF 2 Claims



A wood preservative composition which substantially eliminates formation of pentachlorophenol crystals on the surface of the treated wood and results in increased paintability of the treated wood over compositions previously used consists of polypropylene glycol and a thermoplastic hydrocarbon resin derived from high temperature cracking of petroleum added to a solution of pentachlorophenol in a narrow boiling range mineral spirits solvent. Minor

amounts of dioctylphthalate may be added which, along with the polypropylene glycol, prevent the formation of visible pentachlorophenol crystals on the surface of the treated product. Wood or other cellulosic materials are impregnated with the composition under pressure and the solvent carrier extracted and recovered from the wood before discharge of the wood from the treating chamber by a combination of heat and vacuum. The treated product, on removal from the treating chamber, is dry and clean to the touch with no "blooming" or formation of visible pentachlorophenol crystals on the surface of the wood.

3,706,581

SOIL GROUTING PROCESS AND COMPOSITION

Anthony James Whitworth, Scarborough, Ontario, Canada, William Arthur Lees, Chandlers Ford, England, and Stephen Yi-Sun Tung and Ernest Anthony Hajto, Scarborough, Ontario, Canada, assignors to The Borden Company, New York, N.Y.

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,147

Int. Cl. E02d *3/12*

U.S. Cl. 61—36 **21 Claims**

A process for stabilizing soil comprises impregnation with an alkaline aqueous gel-forming composition consisting essentially of (a) a polyphenolic material such as a vegetable tannin extract and (b) a precalculated amount of a gelling agent dispersible in said composition and containing a complexing element selected from silicon, chromium^{VI}, vanadium and molybdenum. The method is surprisingly effective in the absence of formaldehyde and has the advantage of eliminating obnoxious fumes.

3,706,582

GLASS FRIT-CERAMIC POWDER COMPOSITION

Edward Meyer, Russell, Pa., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Sept. 20, 1968, Ser. No. 761,164

Int. Cl. C04b *33/00*

U.S. Cl. 106—39 R **1 Claim**

Disclosed are techniques for fabricating metal-ceramic articles wherein a hermetic seal is desired between the metal-ceramic jointure. The technique involves utilization of a powdered ceramic containing a binding material which is compressed in a mould around the metal part or parts to be incorporated therein. The green part so formed exhibits superior strength and the article is much easier to handle for subsequent firing. Also disclosed is a glass-ceramic powder composition ideally suited to this process, together with methods for treating the metal parts to insure a hermetic seal.

3,706,583

THERMAL SHOCK RESISTANT HAFNIA CERAMIC MATERIAL

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Lynn D. Lineback, 2612-B Noble Road, and Charles R. Manning, 4812 Connell Drive, both of Raleigh, N.C.

Filed Oct. 14, 1971, Ser. No. 189,375

Int. Cl. C04b *35/00*

U.S. Cl. 106—39 R **18 Claims**

Ceramic hafnia artefacts having high thermal shock resistance are provided by incorporating tungsten or molybdenum particles in a yttria-, magnesia-, or calcia-stabilized hafnia matrix. The mix is sintered by hot pressing to form the ceramic article which has a high fracture strength relative to its elastic modulus and thus has an improved thermal shock resistance. The hafnia is preferably stabilized to about 50 percent and the tungsten or molybdenum particles are preferably elongate, having a length/thickness ratio of at least 2/1. Tungsten or molybdenum wire pieces are suitable.

3,706,584

COMPOSITIONS USEFUL IN THE PRODUCTION OF PAPER PRODUCTS AND BASED UPON NOVEL STARCH DERIVATIVES

Richard W. Cescato, Chicago, Ill., assignor to CPC International Inc.

No Drawing. Original application Dec. 30, 1966, Ser. No. 608,720, now Patent No. 3,654,263, dated Apr. 4, 1972. Divided and this application May 25, 1970, Ser. No. 48,674

Int. Cl. C08b *27/02*

U.S. Cl. 106—214 **32 Claims**

Covers paper coating compositions and processes for making them, utilizing as a binder an oxidized cationic starch. The oxidized cationic starch is prepared by first reacting starch with a reagent that introduces a positive electric charge into the starch molecule, to a degree of substitution of from about 0.01 to about 0.1 with cationic-type substituents. This derivatized starch is then oxidized with a hypochlorite-type oxidizing agent, simultaneously to thin the starch molecule and to introduce carboxyl groups in sufficient quantity that the ratio of the percentage of the carboxyl groups by weight, dry basis, to the degree of substitution with the cationic-type substituent, is at least 1 to 1.

3,706,585

METHOD FOR PRODUCING PEARLESCENT BASIC LEAD CARBONATE

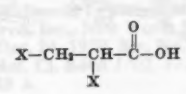
Frank J. Eckert, Morrisville, Pa., and David R. Meldrum, Englishtown, N.J., assignors to Cities Service Company, New York, N.Y.

Filed Oct. 22, 1970, Ser. No. 83,185

Int. Cl. C09c *1/14*

U.S. Cl. 106—291 **16 Claims**

A pearlescent pigment consisting of hexagonal crystalline platelets of basic lead carbonate is produced by bubbling a diluted stream of carbon dioxide gas into an aqueous solution of a basic lead salt which is derived from the reaction of lead monoxide with an acid. The acid that is reacted with the lead monoxide can be nitric acid, but more preferably will have the general formula:



wherein X is a member from the group consisting of hydrogen, methyl, and halogen. The carbon dioxide stream that is bubbled into the salt solution can be diluted with any suitable gas that is substantially nonreactive with the basic lead salt, e.g. air, nitrogen, or one of the inert gases, thus providing control over the rate and extent of crystal initiation and growth. The resulting basic lead carbonate pigment can be incorporated into plastics, lacquers and the like to provide articles having the appearance of natural pearl.

3,706,586

METHOD OF PRODUCING A PEARLESCENT BASIC LEND CARBONATE PIGMENT

David R. Meldrum, Englishtown, N.J., and Frank J. Eckert, Marrisville, Pa., assignors to Cities Service Company, New York, N.Y.

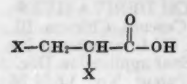
Filed Dec. 11, 1970, Ser. No. 97,351

Int. Cl. C09c *1/00, 1/14*

U.S. Cl. 106—291 **14 Claims**

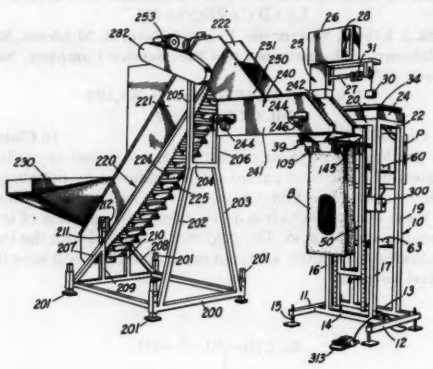
A pearlescent pigment consisting of hexagonal platelets of basic lead carbonate is produced by bubbling carbon dioxide gas into an aqueous solution of a basic lead salt which is derived from the reaction of lead monoxide with an acid. The

acid that is reacted with the lead monoxide can be nitric acid, but more preferably will have the general formula:



wherein X is a member from the group consisting of hydrogen, methyl and halogen. Reaction of the carbon dioxide with the basic lead salt is carried out in the presence of dimethylsulfoxide (DMSO) which is dissolved in the aqueous reaction medium, thus facilitating control over the rate and extent of crystal initiation and growth. The resulting basic lead carbonate pigment can be incorporated into plastics, lacquers, and the like to provide articles having the appearance of natural pearl.

3,706,587
AUTOMATIC FILLING AND WEIGHING APPARATUS
Nelson R. Henry, 583 Willivee Drive, Decatur, Ga. 30033
Filed Dec. 24, 1970, Ser. No. 101,269
Int. Cl. G01g *13/02*
U.S. Cl. 177—1 **12 Claims**



Automatic filling and weighing mechanism having a weighing station with support for suspending a manually installed receptacle, such as a bag, in a fixed position, in combination with a conveyor and drive mechanism for driving the conveyor at two different prescribed speeds; namely, a relatively high bulk filling speed. One of the two weighing mechanisms determines when the receptacle is substantially filled with articles fed from the conveyor and the other weighing mechanism determines when the receptacle is completely filled to a prescribed weight. A control mechanism in combination with the first weighing mechanism causes a shifting of the conveyor from high speed to low speed. When the prescribed weight for the receptacle has been achieved a control, associated with the second weighing mechanism, automatically stops the conveyor. When the conveyor is stopped the bag is manually removed. A foot actuated control switch determines when the conveyor is again actuated.

ERRATUM

For Class 117—226 see:
Patent No. 3,706,695

3,706,588
METHOD OF FIXING ELECTROSTATICALLY PRODUCED IMAGES
Howard G. Shimola, Lakewood, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio
No Drawing. Filed Jan. 18, 1971, Ser. No. 107,539
Int. Cl. C03g *13/20, 15/20*
U.S. Cl. 117—21 **1 Claim**

An electrostatically produced, toned image is fixed to the photoconductive surface by contact with fluid at elevated temperatures.

3,706,589
METHOD FOR TEMPORARILY PROTECTING THE SURFACES OF AN ARTICLE
Tadanori Fukuda and Masao Takahashi, Otsu-shi, Shoji Ogihara, Tokorozawa-shi, and Masato Sekiya, Tokyo, Japan, assignors to Toray Industries, Inc., Honda Motor Company, Ltd., and Fujijura Kasei Company, Ltd., all of Tokyo, Japan, fractional part interest to each
No Drawing. Filed June 15, 1970, Ser. No. 46,541
Claims priority, application Japan, June 19, 1969, 44/48,050, 44/48,051
Int. Cl. B44d *1/14*
U.S. Cl. 117—6 **4 Claims**

Surface protective compositions consisting essentially of a mixture of inorganic and/or organic powder and a dispersant-binder of wax and/or synthetic resin emulsion with water serving as the main solvent, and a method for temporary surface protection of articles wherein the above composition is applied onto the surface to be protected, and further water-insoluble plastic coating is formed thereon.

3,706,590
FUNCTIONAL SURFACE COATING COMPOSITIONS FOR CELLULOSIC MATERIAL
Ronald C. Moyer, North Kingstown, R.I., and Melville W. Uffner, Media, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
No Drawing. Original application Dec. 15, 1969, Ser. No. 885,314, now Patent No. 3,664,987, dated May 23, 1972. Divided and this application Jan. 31, 1972, Ser. No. 222,360
Int. Cl. B44d *1/02*
U.S. Cl. 117—111 B **8 Claims**

Functional surface coating compositions, prepared by blending a mixture of a fluorine-containing phosphate material and a non-fluorine-containing material in aqueous medium, impart solvent, grease and oil resistance to cellulosic materials.

3,706,591
METHOD FOR PREPARING ORGANOPOLYSILOXANE ELASTOMERS
Siegfried Nitzsche, Jurgen Burkhardt, and Karl-Heinrich Wegehaupt, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany
No Drawing. Original application Sept. 24, 1969, Ser. No. 860,788, now Patent No. 3,629,359. Divided and this application Nov. 9, 1970, Ser. No. 88,205
Claims priority, application Germany, Sept. 25, 1968, P 17 94 219.7
Int. Cl. C03c *17/30*
U.S. Cl. 117—124 F **6 Claims**

Linear, liquid organopolysiloxanes are vulcanized and cured to form elastomers employing polycyclicdiorganopolysiloxanes containing at least one group of the formula

where R is a monovalent hydrocarbyl or substituted hydrocarbyl radical and an acid catalyst. The silicone rubber so produced adheres firmly to siliceous substrates and may be used to form laminates of glass.

3,706,592
ADHESION PROMOTING AGENTS
J. Brent Thomson, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
No Drawing. Application Sept. 30, 1969, Ser. No. 862,531, which is a continuation-in-part of abandoned application Ser. No. 789,974, Dec. 31, 1968. Divided and this application July 30, 1971, Ser. No. 167,799
Int. Cl. C03c ***25/02, 17/30;*** **B32b** ***17/04***
U.S. Cl. 117—72 18 Claims

Disclosed are nitrogen containing silane compounds of the formula

$$(X)_a\text{—}\overset{(T)_b}{\overset{|}{Si}}\text{—}[R\text{—}(Z)_c]_d$$

where R is an organic radical, X is selected from halo, hydroxy, alkoxy, aryloxy, organo oxycarbonyl, azido, amine, and amide radicals; T is selected from alkyl, cycloalkyl, aryl, alkaryl, and aralkyl radicals; *a* is an integer from 1 to 3; *b* is an integer from 0 to 2; *c* is an integer from 1 to 10; *d* is an integer from 1 to 3; and $a+b+d$ equals 4; and Z is selected from

$$\text{—O—}\overset{O}{\overset{\|}{C}}\text{—}\overset{R'}{\overset{|}{C}}N_2,\ \text{—O}\overset{O}{\overset{\|}{C}}N_3,\ \text{and —}SO_2N_3$$

where R′ is selected from hydrogen, alkyl, cycloalkyl, aryl and —COOR″ radicals; where R″ is selected from alkyl, cycloalkyl, and aryl radicals. Also disclosed is a process to promote the adhesion of polymers to siliceous materials, metals, metal oxides, and other polymers using the said silane compounds. In particular, there is disclosed a process of improving the adhesion of tire cord to rubber tire stock using the said silane compounds. The cross-linking of polymers with the silane compounds is also disclosed.

3,706,593
IMAGE-RECEIVING MATERIAL FOR TRANSFER IMAGES
Shizuo Miyano, Keishiro Kido, Asaji Kondo, and Eiichi Mizuki, Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 9, 1969, Ser. No. 883,496
Claims priority, application Japan, Dec. 10, 1968, 43/90,349
Int. Cl. B44d ***5/00***
U.S. Cl. 117—127 11 Claims

Image-receiving material for transfer images, more particularly, image-receiving material for printing or photographic transfer images, which is produced by applying microcapsules having walls of hydrophilic polymer film and containing transparent or semi-transparent particles to a support having a metallic gloss which reflects the light well.

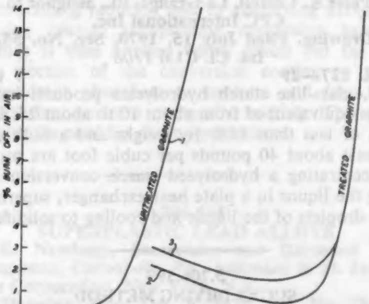
3,706,594
FIBROUS SUBSTRATE TREATED WITH COPOLYMERS OF FLUOROALKYL ETHERS AND MALEIC ANHYDRIDE
William L. Wasley, Berkeley, and Allen G. Pittman, El Cerrito, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture
Filed Feb. 22, 1971, Ser. No. 117,777
Int. Cl. D06m ***15/16***
U.S. Cl. 117—139.5 A 20 Claims

Fluoroalkyl allyl (or methallyl) ethers are copolymerized with maleic anhydride. The copolymer products are useful for many purposes, including application to fibrous materials to provide both soil repellency and soil releasability.

3,706,595
METHOD OF APPLYING A RESIN BINDER TO A SUBSTRATE
Arthur H. Drelich, Plainfield, and Bobby R. Bowman, East Brunswick, N.J., assignors to Johnson & Johnson
No Drawing. Filed Jan. 22, 1971, Ser. No. 109,026
Int. Cl. B44d ***1/44;*** **C08h** ***19/00***
U.S. Cl. 117—38 13 Claims

Methods of controlling the migration of resin binders in the manufacture of bonded nonwoven fabrics from fibrous webs comprising the use of a resin binder composition comprising: (1) a synthetic resin; (2) a water soluble, polymeric, carboxylic thickener; and (3) a metal ammine, complex coordination compound capable of releasing ions of said metal to control the total migration of the resin binder during its deposition on the fibrous web.

3,706,596
PROCESS AND COMPOSITION FOR THE MANUFACTURE OF OXIDATION RESISTANT GRAPHITE ARTICLES
Rudolph W. Wallouch, Lewiston, N.Y., assignor to Airco, Inc., New York, N.Y.
Filed Dec. 24, 1970, Ser. No. 101,218
Int. Cl. B44d ***1/02, 1/20***
U.S. Cl. 117—169 A 8 Claims



Increased oxidation resistance properties are enabled in a graphite article by a process according to which the said article is impregnated with an aqueous colloidal dispersion of particulate silica and with a solution of methyl

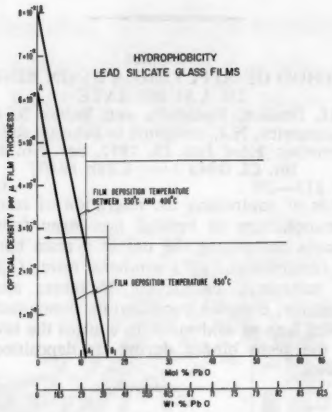
alcohol containing boric oxide and phosphorous pentoxide in the form of methyl borate and methyl phosphate esters. Following said impregnation the article is dried, and—where high temperature use (up to 1200° C.) is contemplated—fired to 1100° C. in an inert atmosphere. In addition to the process set forth, the graphite products resulting therefrom are claimed, as is the impregnant per se.

3,706,597

GLASS VAPOR DEPOSITION ON SURFACES OF SEMICONDUCTOR ELEMENTS

Pei-Ching Li, Hopewell Junction, and Paul J. Tsang, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,639
Int. Cl. C23c *11/08*
U.S. Cl. 117—201 **6 Claims**


HYDROPHOBICITY
LEAD SILICATE GLASS FILMS
OPTICAL DENSITY PER Å FILM THICKNESS
FILM DEPOSITION TEMPERATURE BETWEEN 330°C AND 400°C
FILM DEPOSITION TEMPERATURE 450°C
Mol % PbO
Wt % PbO

A process for vapor deposition of glass films on semiconductor materials which comprises heating the semiconductor material in an atmosphere mixture of organo silicon, organo lead, oxygen and nitrogen.

3,706,598

SOLID, GLASS-LIKE STARCH HYDROLYSATES HAVING HIGH DENSITIES

Peter K. Carrell, La Grange, Ill., assignor to CPC International Inc.

No Drawing. Filed July 15, 1970, Ser. No. 55,627
Int. Cl. C13l *1/08*
U.S. Cl. 127—29 **7 Claims**

Solid, glass-like starch hydrolysate products having a dextrose equivalent of from about 10 to about 25, a water content of less than 15% by weight and a bulk density of at least about 40 pounds per cubic foot are produced by concentrating a hydrolyzed starch conversion liquor, heating the liquor in a plate heat exchanger, superheating minute droplets of the liquor and cooling to solidification.

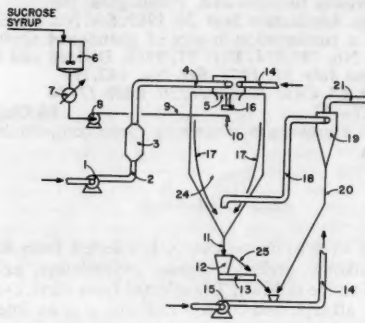
3,706,599

SUGAR DRYING METHOD

Edward T. Woodruff, Woodbine, Md., and Viggo S. Andersen, Hackettstown, N.J., assignors to W. R. Grace & Co., New York, N.Y.

Filed May 3, 1971, Ser. No. 139,664
Int. Cl. C13f *1/02*
U.S. Cl. 127—62 **10 Claims**

In a process for drying droplets of sucrose-containing solution in a current of heated air and in the presence of 0.5 to 4.0 parts by weight of separately introduced recycled product solids per part by weight of solids in said solution the improvement which comprises controlling the average particle size of the recycled product solids at about 200 microns or less and dispersing the recycled fine-sized solids at the outer periphery of the drying zone as an enveloping solids-bearing atmosphere around the solution droplets. Apparatus is disclosed for carrying out the process including a spray drying chamber, a centrally located liquid atomizer, drying air inlet and outlet conduits, solids product collection means, means for deagglommerating product solids, and means for recycling product solids to the drying chamber and introducing them tangentially as an enveloping curtain of solids adjacent the walls of the drying chamber.



3,706,600

STRIPPING OF COATED TITANIUM ELECTRODES FOR RE-COATING

Nicholas William James Pumphrey, and Keith Graham Moss, both of the Heath, Runcorn, Cheshire, England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 18, 1971, Ser. No. 154,611
Claims priority, application Great Britain, June 26, 1970, 31,048/70
Int. Cl. C22b *11/00*; C23g *1/28*
U.S. Cl. 134—3 **10 Claims**

Stripping a coating comprising a platinum group metal oxide from a titanium support member of a coated titanium electrode ready for re-coating, by immersing the electrode in molten alkali metal hydroxide containing a small amount of alkali metal hydride, washing the treated electrode in water and then, preferably, dipping in hot dilute mineral acid.

3,706,601

METHOD OF PRODUCING AN ELECTRODE WITH A POLYMER BINDER BY ROLLING

Murray P. Strier, Niagara Falls, N.Y., and Joseph S. Smatko, Santa Barbara, Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Jan. 28, 1970, Ser. No. 6,409
Int. Cl. H01m *35/02*
U.S. Cl. 136—20 **18 Claims**

Method for producing a battery electrode, particularly a zinc electrode, of improved strength and stability, and which has a porous cellular structure, by mixing an aqueous dispersion of electrode material such as zinc oxide, with an aqueous

dispersion of a latex type polymer such as a fluorocarbon polymer, e.g., polytetrafluoroethylene, casting a film of such mixture, drying the film, sintering the dried film, and rolling such sintered film, to form a fibrous polymer structure binding

the particles of electrode material. The resulting sintered and rolled film can be employed per se as an electrode, e.g., a zinc electrode, or such film can be ground and the ground particles then compacted to form an electrode.

3,706,602

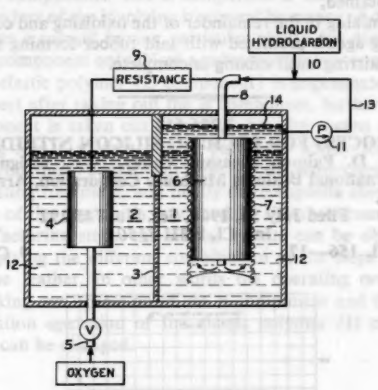
FUEL CELL ELECTRODE STRUCTURE UTILIZING CAPILLARY ACTION

George T. Miller, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of application Ser. No. 673,202, Oct. 5, 1967. This application Dec. 18, 1969, Ser. No. 886,166

Int. Cl. H01m *21/04*

U.S. Cl. 136—120 FC **11 Claims**



A fuel electrode is provided by wrapping or pressing a hydrophobic, porous sheet of fiber or paper, upon which a catalyst is deposited, into contact with an electrically conductive base or support. In use, a liquid fuel, substantially insoluble in the electrolyte moves by capillary action or wicks between the electrode base and the hydrophobic, porous sheet of material to contact the catalyst at the electrolyte, catalyst, fuel interface, generating electrical current.

ERRATA

For Classes 136—175 and 136—178 see:
Patents Nos. 3,706,616 and 3,706,617

3,706,603

METAL COATINGS COMPRISING HEXAVALENT CHROMIUM, TRIVALENT CHROMIUM, SILICA OR A SILICATE AND AN ALKALI METAL CATION

Clifford A. Vessey, Harrogate, Colin Albon, Knaresborough, and Kenneth Holker, Harrogate, England, assignors to Albright & Wilson Limited, Oldbury, near Birmingham, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 731,714, May 24, 1958. This application Apr. 12, 1971, Ser. No. 133,409

Claims priority, application Great Britain, June 14, 1967, 27,489/67; Nov. 27, 1967, 53,816/67

Int. Cl. C23f *7/26, 11/04;* H01b *3/02*

U.S. Cl. 148—6.2 **18 Claims**

The invention provides an aqueous composition for providing metals with electrical and/or corrosion resistance having a pH of 2.0 to 4.0 and dissolved or uniformly dispersed therein: (a) a hexavalent chromium compound; (b) a trivalent chromium compound; (c) a soluble or insoluble colloidally dispersable silica and/or silicate in a total amount of at least 0.5 grams per 100 ml. of the composition; and (d) an alkali metal cation, the weight ratio of hexavalent chromium to total chromium (each determined on a CrO_3 basis) being between 0.5:1 and 0.75:1, the total chromium content being at least 0.5 g. chromium (calculated as CrO_3) per 100 ml. of the composition, and the weight ratio of hexavalent chromium (calculated as CrO_3) to alkali metal (calculated as the hydroxide) being between 5:1 and 100:1, the said aqueous composition being free from reducing agents for hexalent chromium. The invention also provides a method for preparing cured coatings on metal by applying said aqueous composition to a metal surface and curing thereon.

3,706,604

PROCESS FOR THE COATING OF METAL

Elmer H. Plaxton, Bloomfield Hills, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Ohio

No Drawing. Continuation-in-part of application Ser. No. 789,005, Dec. 31, 1968, which is a continuation-in-part of applications Ser. No. 378,946, June 29, 1964, and Ser. No. 378,982, June 29, 1964. This application Jan. 20, 1971, Ser. No. 108,200

Int. Cl. C23f *7/10, 7/14, 7/18*

U.S. Cl. 148—6.16 **8 Claims**

An improved process for coating metal wherein a phosphate or oxalate conversion coating composition is applied to an aluminum, zinc or ferrous metal surface to form a substantially dry, uniform phosphate or oxalate conversion coating, a portion of which is water-soluble. An organic containing reducing and/or esterifying fixing or immobilizing coating composition containing hexavalent chromium is then applied which reacts out the water-soluble portion of the conversion coating to produce water-insoluble phosphate or oxalates and form a substantially dry, uniform composite coating. This process eliminates the need for rinsing procedures.

3,706,605

SUPERPLASTIC LEAD ALLOYS

Dale E. Newbury, Shamokin, and Raymond David Prengaman, Coraopolis, Pa., assignors to St. Joe Minerals Corporation, New York, N.Y.

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,177

Int. Cl. C22c *11/00, 11/02;* C22f *1/12*

U.S. Cl. 148—11.5 R **9 Claims**

Superplastic lead alloys can be prepared by casting an age hardenable lead alloy; fully age hardening the casting; and thereafter severely working or deforming the fully age hardened casting by extruding it at a low exit surface temperature of from about 120° F. to about 250° F.

3,706,606

THERMOMECHANICAL TREATMENT PROCESS FOR HEAT TREATABLE ALUMINIUM ALLOYS

Ettore Di Russo, and Mario Conserva, both of Novara, Italy, assignors to Societa per L'Esercizio dell 'Istituto Sperimentale dei Metalli Leggeri S.p.A, Milan, Italy

Filed April 14, 1970, Ser. No. 28,514

Claims priority, application Italy, Feb. 10, 1970, 20,399 A/70

Int. Cl. C22f *1/04*

U.S. Cl. 148—12.7 3 Claims

Heat treatable aluminum alloys of increased mechanical strength are produced by submitting the alloy to a solution and quenching treatment followed by a combination of plastic deformations and precipitation hardening, including a first aging treatment at a temperature not higher than 200°C, a plastic deformation and then a further aging at a temperature not lower than the first, the combination for deformations and hardenings being a cycle repeatable on the alloy.

3,706,607

CHEMICAL FOAMING OF WATER-BEARING EXPLOSIVES

Joseph D. Chrisp, Hagerstown, Md., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 21, 1971, Ser. No. 108,646

Int. Cl. C06b *19/00;* C06d *5/00*

U.S. Cl. 149—2 20 Claims

Making foamed semisolid colloidal dispersions of water-bearing blasting agents containing an inorganic oxidizing salt, e.g., ammonium nitrate, fuel, water, and separately incorporating into the mix each component of a two-component foaming agent composition comprising (a) a hydrazine or derivative thereof, and (b) an oxidizing agent that aids in decomposing said hydrazine(s).

3,706,608

COMBUSTION TAILORING OF SOLID PROPELLANTS BY OXIDIZER ENCASEMENT

Robert L. Geisler, Lancaster, Calif., assignor to the United States of America as represented by the Secretary of the Air Force

Filed March 24, 1970, Ser. No. 24,894

Int. Cl. C06b *19/02*

U.S. Cl. 149—6 3 Claims

Solid rocket fuel particles such as aluminum, beryllium, magnesium, or boron are encased in an oxidizer by crystallizing the oxidizer onto the fuel particles. Encasement of the fuel particles before binding with a binder matrix enhances the combustion efficiency of the propellant.

3,706,609

TNT COMPOSITION CONTAINING A CELLULOSIC RESIN WHICH IS FREE FROM OILY EXUDATION UPON STORAGE

H. William Voigt, Jr., Stanhope, N.J.; Lawrence W. Pell, West Orange, N.J., and Jean P. Picard, Morristown, N.J., assignors to the United States of America as represented by the Secretary of the Army

Filed Dec. 29, 1970, Ser. No. 102,541

Int. Cl. C06b *9/04*

U.S. Cl. 149—18 7 Claims

A castable high explosive composition of the 2, 4, 6-trinitrotoluene (TNT) variety containing a cellulosic resin having a thermoplastic nature.

A method of incorporating a thermoplastic resin of the cellulosic variety into a castable high explosive composition containing TNT by initially coating such cellulosic resin on the surface of a finely divided solid explosive and then uniformly dispersing the latter throughout the castable composition.

3,706,610

COMPOSITE POLYSULFIDE PROPELLANT CURED WITH A MONOFUNCTIONAL MERCAPTAN

Harry R. Ferguson, Morrisville, Pa., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Nov. 7, 1962, Ser. No. 236,171

Int. Cl. C06d *5/06*

U.S. Cl. 149—19 10 Claims

Solid composite propellants based on cured polysulfide polymers are improved in elasticity and resistance to mechanical shock by using a monofunctional mercaptan as the curing agent. The curing step is conducted in a mold of the desired shape.

3,706,611

METHOD OF MAKING PYROTECHNIC COMPOSITION CONTAINING A POLYSULPHIDE POLYMER

Garth W. Hastings, Caringbah, New South Wales, Australia, assignor to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

No Drawing. Filed Aug. 26, 1965, Ser. No. 482,945

Int. Cl. C06b *15/00*

U.S. Cl. 149—44 5 Claims

1. The process of producing a plastic pyrotechnic composition made up of a polysulphide liquid polymer, a rubber-forming agent, a light-producing metal powder, an inorganic oxidising agent and a colouring agent which comprises the steps of:

(a) mixing said light-producing powder with said liquid polymer in a sealed mixer heated to 100° C. under a very low pressure,

(b) stirring the mixture until adequate wetting is obtained,

(c) mixing in two-thirds of the oxidising and colouring agents,

d) stirring the mixture until adequate wetting is again obtained,

(e) mixing in the remainder of the oxidising and colouring agents premixed with said rubber-forming agent,

(f) stirring until mixing is complete.

3,706,612

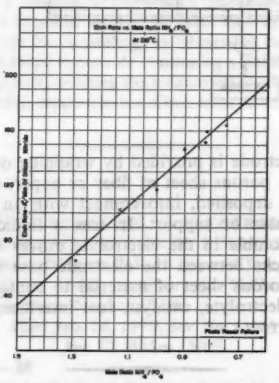
PROCESS FOR ETCHING SILICON NITRIDE

Myron D. Palmer, Pleasant Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 16, 1968, Ser. No. 745,292

Int. Cl. H01l *7/50*

U.S. Cl. 156—17 9 Claims



A process for etching silicon nitride which comprises contacting a silicon nitride substrate with fused am-

monium hydrogen phosphate at a temperature in the range of about 190° C. to 235° C. The preferred mole ratio of NH_4 to PO_4 is 0.8 to 1.5. The process finds particular applicability in etching a silicon nitride substrate which has been masked with a photo-resist.

3,706,613

METHOD FOR PRODUCING COMPOSITE SHEETS COMPOSED OF POLYMERIC FIBERS AND ELASTIC MATERIAL

Masamichi Toki, Otsu-shi, Toyohiko Hikota, Kyoto-shi, and Miyoshi Okamoto, Otsu-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jan. 13, 1969, Ser. No. 790,808

Claims priority, application Japan, Jan. 13, 1968, 43/1,698

Int. Cl. B29c *27/00*

U.S. Cl. 156—85 38 Claims

A composite sheet substance having the similar appearance and physical properties to the genuine leather is manufactured by means of using fibrous material composed of a plurality of fine fibers or filament and an elastic polymer surrounding the fine fibers. A bonded fibrous material composed of fibrous component (A component) containing a plurality of fine fibers or filaments and another component of bonding agent (B component) bound the above-mentioned fine fibers or filaments in a bundle. Further a sheet composed of the bonded fibrous material is made. The A component has different dissolving property by solvent from the B component. Next the above-mentioned sheet is involved with a polymer (C component) having a different solvent dissolving property from the A and B components. The B component is taken out from the product of the involving treatment by means of dissolving into a solvent having particular ability for dissolving the B component only. Next a substance mainly composed of an elastic polymer (D component) is impregnated into the sheet after taking out the B component, further the C component is taken out from the sheet by means of dissolving into a solvent having particular ability for only dissolving the C component after the abovementioned impregnating treatment, and finally the composite sheet substance of the purpose is produced. In the abovementioned manufacturing steps, the similar results can be obtained by applying the different combination of the steps to the genuine leather, in other words the operating order of the taking out operation of the B component and the impregnation operation of the elastic polymer (D component) can be changed.

3,706,614

FABRICATION OF COMPOSITE MATERIAL BY UNITING THIN FIBER COATED POLYMERIZABLE PLASTIC SHEETS

Milton E. Kirkpatrick, Palos Verdes Peninsula; Jo L. Reger, Los Angeles, and Karl P. Staudhammer, Gardena, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed March 21, 1968, Ser. No. 714,901

Int. Cl. B32b *31/12*

U.S. Cl. 156—151 1 Claim

Micron-size elongated particles or fibers of high strength material are dielectrophoretically deposited on a thin substrate or low strength material so that the fibers are aligned parallel to each other in a layer of micron-size thickness. A multiplicity of such fiber coated substrates are laminated bonding to form an integral structure.

3,706,615

COMPOSITE TUBE AND A METHOD OF PRODUCING THE SAME USING THE FILAMENT WINDING PROCESS

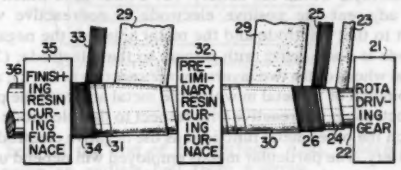
Shigeru Nishiyama, Suita, Hiroshi Kusano, Ashiya, Yoshiro Nagai, Osaka, and Satoshi Miura, Nishinomiya, Japan, assignors to Kubota Iron & Machinery Works, Ltd., Osaka, Japan

Filed Feb. 27, 1970, Ser. No. 15,114

Claims priority, application Japan, June 4, 1969, 44/44,251, 44/44,252, 44/44,253

Int. Cl. F16r *9/08*; B65h *81/00*

U.S. Cl. 156—169 11 Claims



A method of producing a filament-wound composite tube, which comprises winding glass fiber threads impregnated with a thermosetting resin on the outer surface of a mandrel, forming a sheet material comprised of paper or cloth or the like having a coating thereon of a thermosetting resin or a mixture of a thermosetting resin and additives such as sand, successively winding the resulting sheet material onto the outer surface of the wound glass fiber threads to thereby form a number of layers of sheet material, and winding an outer layer of glass fiber threads impregnated with a thermosetting resin onto the exterior surface of the intermediate sheet material is disclosed. A composite tube produced by the filament-winding process comprising inner and outer layers of glass fiber threads impregnated with a thermosetting resin, and then an intermediate layer comprised of the sheet material which is in turn comprised of paper or cloth or the like having a coating thereon of a thermosetting resin or a mixture of a thermosetting resin and additives such as sand, is also disclosed.

3,706,616

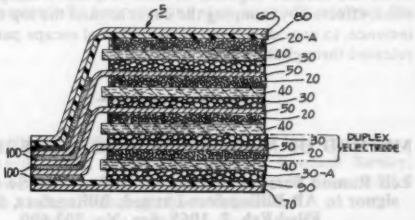
DUPLEX ELECTRODE CONSTRUCTION USING CONTINUOUS METAL CARRIER STRIP HAVING AT LEAST ONE NONREACTIVE METAL SIDE

Bernard C. Bergum, Monona, and John A. Youngquist, Madison, both of Wis., assignors to ESB Incorporated

Filed Dec. 21, 1970, Ser. No. 100,237

Int. Cl. H01m *31/00*

U.S. Cl. 136—175 10 Claims



Duplex electrodes are constructed by placing intermittent deposits of positive and negative electrodes on opposite sides of a continuous metal carrier strip having two nonreactive metal sides. In another embodiment, duplex electrodes are constructed by placing intermittent deposits of positive elec-

trodes on the only nonreactive side of the bimetal carrier strip, with the reactive side of the bimetal strip functioning as the negative electrode in the duplex electrode. The duplex electrodes are assembled into multicell batteries. The assembly preferably occurs while the duplex electrodes are structurally and electrically connected by the continuous metal carrier strip; the carrier strip is then subsequently cut between duplex electrodes to obtain structurally and electrically unconnected batteries. Alternatively, the carrier strip may be cut between duplex electrodes before those electrodes are assembled into multicell batteries.

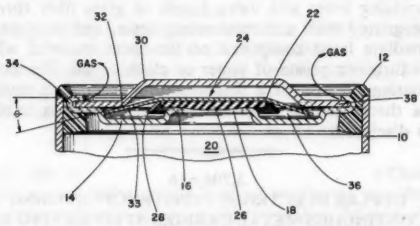
The metal carrier strip may comprise: (1) a unimetal which is nonreactive to the positive and negative electrodes and to the electrolyte within the battery; (2) a bimetal in which the metal adjacent the positive electrode is nonreactive with respect to that electrode and the metal adjacent the negative electrode is nonreactive with respect to that electrode; (3) a trimetal whose outer two layers are nonreactive as in (2); and, (4) a bimetal or trimetal in which the metal adjacent the positive electrode is nonreactive with respect to that electrode and in which the other metal functions as the negative electrode in the battery. The particular metals employed will depend upon the electrochemical system used in the battery.

3,706,617

RESEALABLE SAFETY VALVE

Robert E. Stark, Littleton, and Toshio Uba, Denver, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Nov. 23, 1970, Ser. No. 92,100
Int. Cl. H01m *1/06*
U.S. Cl. 136—178 **11 Claims**



An integral low profile cell closure equipped with resealable safety valve means is disclosed having a cover, an apertured seat centrally enclosed within the cover, elongated resilient sealing means bearing on the seat, and a top cover bearing on the resilient means at a position outwardly spaced from the bearing positions formed with the seat. The cover and top cover are secured together at their respective marginal portions, effected by crimping the cover around the top cover, for instance, to provide a large cross-sectional escape path for gas released through the valve.

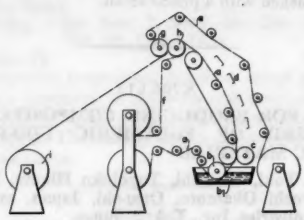
3,706,618

METHOD OF MANUFACTURING A FABRIC-LIKE MATERIAL

Leif Ramon Persson, Solbacken, Billingsfors, Sweden, assignor to AB Billingsfors-Langed, Billingsfors, Sweden

Filed Feb. 2, 1968, Ser. No. 702,699
Claims priority, application Sweden, Feb. 16, 1967, 2,146/67
Int. Cl. B32b *29/02*
U.S. Cl. 156—179 **6 Claims**

Fabric-like materials are made by impregnating fibrous material, such as a non-woven fabric or tissue paper, with an adhesive plastic elastomer in an aqueous dispersion. The water in the dispersion is removed, and at least one side of the resulting layer is covered with stretchable tissue paper.



3,706,619

METHOD OF BONDING WOOD AND OTHER MATERIALS WITH RAPID-CURING ADHESIVES USING A PRIMER COMPOSITION

Harlan G. Freeman, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

No Drawing. Filed May 5, 1969, Ser. No. 822,009
Int. Cl. C09j *5/04*
U.S. Cl. 156—315 **6 Claims**

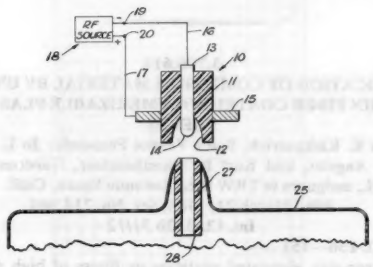
Wood and wood products are adhesively bonded together or to other materials using adhesives which cure at ambient temperature. To obtain good bond strength the surfaces to be bonded are first coated with a relatively dilute resinous primer, the primer being a phenol-resorcinol-formaldehyde resin or an epoxidized phenolic Novolac. The primers are dispersed or dissolved in a suitable carrier vehicle such as water or, in the case of the epoxide, an organic solvent. Room temperature setting adhesives based on resorcinol or amine-modified condensation resins are spread over one or both of the primed surfaces and the surfaces brought together to form a glue line therebetween.

3,706,620

METHOD AND APPARATUS FOR FORMING THE END OF A PLASTIC TUBE AND SEALING THE TUBE WITHIN A FLEXIBLE CONTAINER

Edward G. Dykstra, East Aurora, N.Y., assignor to Ethylox Products, Inc., Buffalo, N.Y.

Filed March 13, 1970, Ser. No. 19,224
Int. Cl. B29c *27/04*
U.S. Cl. 156—221 **3 Claims**



Apparatus for joining the end of a hollow, elongated plastic member to a plastic sheet member and jointly molding the same including a molding member of dielectric material, preferably Teflon, having a rounded cavity in a surface

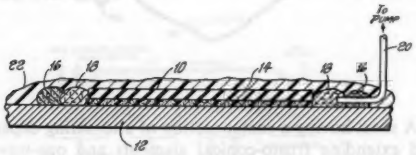
thereof. A first, mandrel-shaped electrode is supported in the molding member and extends into the cavity. A second, outer electrode encircles the molding member and cavity. The plastic members are positioned so that the end to be formed is in the cavity, in contact with the wall thereof, and a high frequency electric current, in the range of about 25–27 megacycles, is passed through the molding member and plastic members whereupon the members are jointly formed into a rounded tip.

3,706,621

VACUUM PROCESS FOR APPLICATION OF SHEET COATINGS

Joseph Z. Lichtman, Brooklyn, N.Y., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 7, 1970, Ser. No. 1,085
Int. Cl. B29c *17/00*
U.S. Cl. 156—285 **5 Claims**



A process for applying erosion resistant coverings to surfaces of structures exposed to cavitation comprising the following steps:

1. Pretreating a surface of the covering material which is in the form of a thin sheet, to improve its adhering properties;
2. Pretreating the surface of the material to be protected (substrate) to improve its adhering properties;
3. Heating the surface of the substrate;
4. Coating said cleaned surfaces with an adhesive of the epoxy-resin-type;
5. Applying the coated surface of the covering to the coated surface of the substrate;
6. Maintaining, preferably by evacuation, close contact between the covering, adhesive and substrate while the adhesive cures.

3,706,622

METHOD OF ADHERING URETHANE FOAMS

Donald J. Rush, Grandview, Mo., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Jan. 22, 1970, Ser. No. 5,134
Int. Cl. C09j *7/00*
U.S. Cl. 156—306 **3 Claims**

A method of adhering rigid urethane foam to itself and to various substrates, such as paper and metal, by means of carefully controlling heat and pressure. The polyurethane foams capable of adhesion are those which allow a post cure at elevated temperature subsequent to their original formation.

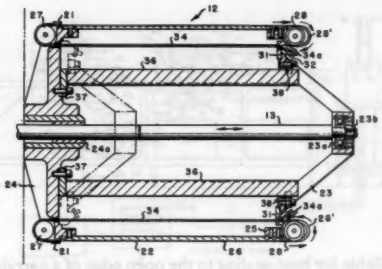
3,706,623

AUTOMATIC BELT DOFFER

Norman E. Klein, Inman, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Sept. 4, 1969, Ser. No. 855,220
Int. Cl. B29h *17/14, 17/16*
U.S. Cl. 156—394 **5 Claims**

A method for removing an endless belt from a surface which comprises moving a forward portion of the surface which is in contact with the endless belt in a direction toward the axis of the surface, peeling the forward portion of the surface from the belt and advancing the endless belt off the end of the surface. Also, apparatus for removing an endless belt from a drum.

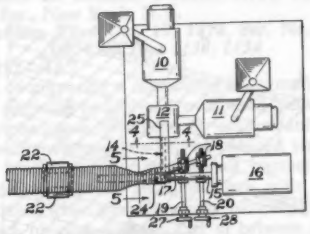


3,706,624

APPARATUS FOR MAKING PLASTIC HOSE

William R. Rinker, Cuyahoga Falls, Ohio, assignor to The B.F. Goodrich Company, New York, N.Y.

Filed Jan. 21, 1969, Ser. No. 792,496
Int. Cl. B29d *27/00*
U.S. Cl. 156—432 **14 Claims**



An apparatus for making continuous reinforced plastic hose by extruding a ribbon of heated plastic, with portions having compositions of different stiffness, winding the ribbon in a continuous helix over two spaced rotating mandrels, and uniting adjacent pitches of the helix during the winding to form a continuous tube. In one embodiment, The mandrels are mutually skewed with one mandrel being power-rotated and the other free to rotate. In that embodiment, the hose is axially advanced by the axial component of rotation of the skewed mandrels. Another embodiment provides for winding of the ribbon over parallel mandrels with the free mandrel having longitudinally sequentially reciprocating slats to axially advance the tubing.

3,706,625

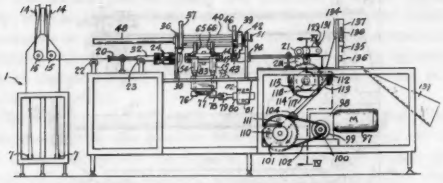
MACHINE FOR FABRICATING BAG HANDLES

Elwyn David Jones, Beloeil, and Edward Kenneth Rowley, Beloeil Station, both of Canada, assignors to Canadian Industries Limited, Montreal, Quebec, Canada

Filed Feb. 11, 1971, Ser. No. 114,535
Claims priority, application Canada, Oct. 7, 1970, 095086
Int. Cl. B31b *1/14;* B32b *31/18;* B29c *27/02*
U.S. Cl. 156—517 **6 Claims**

A machine for attaching handles to components of carrying bags. The machine forms loop handles from a length of heat-

sealable strip and heat-seals the ends of the handle loop to a rectilinear heat-sealable strip. The handle assembly so formed



is available for heat-sealing to the open edge of a carrying bag. The rectilinear strip serves to attach the handle to the bag and to strengthen the open end of the bag.

3,706,626

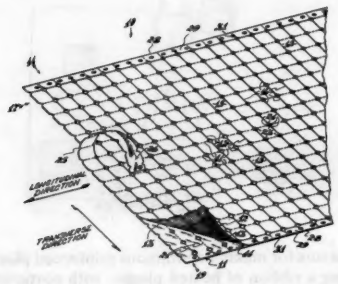
PRESSURE SENSITIVE LABELS

Thomas M. Smith and Walter D. Gregory, Dayton, Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of abandoned application Ser. No. 60,013, July 31, 1970. This application June 29, 1971, Ser. No. 157,913

Int. Cl. B32b *7/06, 3/16;* C09j *7/02*

U.S. Cl. 161—37 **12 Claims**



A sheet of pressure sensitive labels adapted for use in a machine that is computer operated to print prices and other desired information on the individual labels of the sheet. The sheet of labels is backed by a stratum of glassine backing material and, with the exception of the two side edges of the sheet, the labels completely cover the backing. The labels are arranged in longitudinal and transverse rows with each label in juxtaposition to those labels at its sides and at its ends. Further, the labels in transverse rows are completely severed from the labels of adjacent transverse rows by lines of slitting. The backing is partially severed by lines of perforations along the same transverse line beneath the slitting. On the other hand, the labels of the longitudinal rows are only partially severed, as by lines of perforations from those labels at their sides, and the backing is not severed at all along these longitudinal lines of partial label separation. As a result, transverse strips of labels with backing thereon can be torn easily from the sheet, after pricing information has been printed thereon, for application of the individual labels to merchandise as the backing is stripped from the labels of the transverse strip.

3,706,627

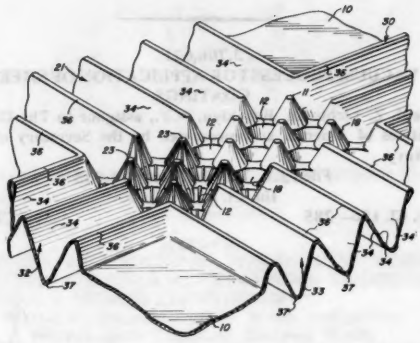
STRESS ORIENTED CORRUGATIONS

Christian Arne, Chicago, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed June 7, 1971, Ser. No. 150,568

Int. Cl. B32b *1/00, 3/28*

U.S. Cl. 161—131 **6 Claims**



A sheet having a center section of alternating depending and extending frusto-conical elements and one-way corrugations extending away from said center section to the edges of the sheet.

3,706,628

EXTRUDED FLEXIBLE SEALING STRIP

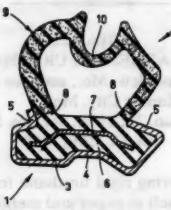
Roberto Azzola, Turin, Italy, assignor to Saiag S.p.A. Industria Articoli Gomma, Cirie, Turin, Italy

Filed Dec. 29, 1970, Ser. No. 102,314

Claims priority, application Italy, Jan. 14, 1970, 67,092/70; Nov. 26, 1970, 70,958/70

Int. Cl. B32b *3/26, 5/18*

U.S. Cl. 161—159 **15 Claims**



A flexible sealing strip comprising extrusion-bonded sealing and anchoring sections of cellular rubber and solid rubber, respectively, includes a reinforcing strip of stamped sheet metal embedded in the anchoring section; the reinforcing strip consists of a series of transversely extending, alternately wide and narrow bars forming therebetween alternately wide and narrow gaps, the bars being interconnected by pairs of oppositely obliquely directed bridging pieces the roots of which on the wide bars are closer to the longitudinal axis of the reinforcing strip than the roots on the narrow bars.

3,706,629

DRAINAGE IMPROVEMENT IN PAPER PULP SUSPENSIONS CONTAINING LIGNIN RESIDUES

Edgar E. Moore, Midland, and William A. Foster, Mapleton, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 23, 1970, Ser. No. 57,782
Int. Cl. D21h *3/38, 3/18, 3/16*
U.S. Cl. 162—168 **13 Claims**

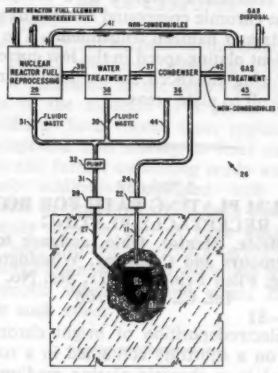
Drainage is improved in a cellulosic pulp suspension containing soluble lignin residues by the addition to the suspension of a high molecular weight water-soluble anionic polymeric polyelectrolyte and alum in a quantity greater than that normally used.

3,706,630

NUCLEAR CHIMNEY RADIOACTIVE WASTE DISPOSAL

Jerry J. Cohen, Livermore, and Arthur E. Lewis, Los Altos, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed May 12, 1971, Ser. No. 142,715
Int. Cl. G21f *9/24*
U.S. Cl. 176—87 **11 Claims**



Aqueous fluidic forms of radioactive wastes are introduced into lower portions of a nuclear chimney wherein water is vaporized therefrom by radioactive decay heat and concentrated wastes are accumulated therein. High level wastes, low level wastes including particulates filtered from the steam and portions of the condensed steam serving as a coolant are introduced over an extended period of time in amounts proportioned to maintain chimney contents at a low temperature level. When sufficient wastes have accumulated input of coolant and radioactive waste is terminated and the cavity may be sealed after vapor output terminates. Radioactive heat output then is employed to melt the chimney contents and rock adjacent to the chimney portions so as to incorporate the radioactive materials into the molten rock. After radioactive heat output diminishes to a level insufficient to offset heat diffusion into the formation the molten mass solidifies permanently trapping the residual radioactivity in an insoluble matrix.

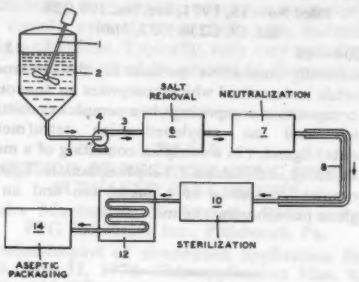
3,706,631

STERILIZATION OF PROTEIN-CONTAINING FLUIDS

John D. Falk, 601 Grove Ave., Corning, Iowa 50841

Filed Oct. 8, 1970, Ser. No. 79,162
Int. Cl. A61k *23/02*
U.S. Cl. 195—1.8 **37 Claims**

A process for sterilization of a fluid which contains protein constituents, without coagulating said protein constituents, and the resultant product. The salts in said fluid are reduced which lowers the pH of the fluid. The fluid is pH adjusted with a basic solution, following which



the fluid is sterilized by exposing the fluid to an energy source which raises the temperature of the fluid to the sterilizing temperature range for that fluid.

3,706,632

MANUFACTURE OF LUBE OIL CONTAINING OVERBASED SULFURIZED CALCIUM ALKYLPHENOLATE

Frederic F. Day and George E. Emery, Port Arthur, Tex., and James G. Dadura, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Oct. 19, 1970, Ser. No. 82,190
Int. Cl. C10m *1/38, 1/54*
U.S. Cl. 252—42.7 **5 Claims**

Method of preparing a lubricating oil composition containing a partially hydrolyzed overbased sulfurized calcium alkylphenolate detergent of antioxidant and skin forming resistant properties and of reduced viscosity and improved filterability comprising first contacting a sulfurized normal calcium alkylphenolate with a calcium alkoxyalkoxide while simultaneously blowing the reaction mixture with nitrogen gas at a rate of between about 0.25 and 0.6 s.c.f.h./gallon of reaction mixture, subsequently stripping the reaction mixture with said gas at a rate of between about 0.25 and 0.6 s.c.f.h./gallon of resultant mixture and then second contacting the stripped mixture with water while simultaneously blowing during said second contacting the stripped mixture with said gas at a rate of between about 0.1 and 0.2 s.c.f.h./gallon of stripped mixture.

3,706,633

PREPARATION OF WATER-INSOLUBLE ENZYME DERIVATIVES

Ephraim Katchalski and Leon Goldstein, Rehovot, Yehuda Levin, Tel-Aviv, and Shmaryahu Blumberg, Rishon le Zion, Israel, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Apr. 10, 1970, Ser. No. 27,423
Int. Cl. C07g *7/02*
U.S. Cl. 195—63 **11 Claims**

Water-insoluble, enzymatically-active compositions comprise dialdehyde starch, an active enzyme, and an alkylene diamine binding said enzyme to said starch. The compositions are prepared by condensing dialdehyde starch with alkylene diamine, reducing and diazotizing the resulting polymeric product to produce a polymeric polydiazonium salt, and thereafter coupling the enzyme to said polydiazonium salt.

3,706,634
ELECTROCHEMICAL COMPOSITIONS AND PROCESSES

Xavier Kowalski, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 15, 1971, Ser. No. 199,028
Int. Cl. C23b 5/02, 5/46
U.S. Cl. 204—46 11 Claims

An electrically conductive medium for the electrodeposition of metals is described which comprises an aqueous solution of a composition comprising (1) a complex consisting of a metal ion and an ethylenediamine tetra(methylene phosphonate) ligand, (2) a complex consisting of a metal ion and a 1-hydroxy, ethylidene-1,1-diphosphonate ligand, and (3) a complex consisting of a metal ion and an amino tri(methylene phosphonate) ligand.

3,706,635
ELECTROCHEMICAL COMPOSITIONS AND PROCESSES

Xavier Kowalski, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

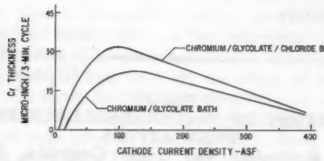
Filed Nov. 15, 1971, Ser. No. 199,036
Int. Cl. C23b 5/02, 5/46
U.S. Cl. 204—46 9 Claims

An electrically conductive medium for the electrodeposition of metals is described which comprises an aqueous solution of a composition comprising (1) a complex consisting of a metal ion and an ethylenediamine tetra(methylene phosphonate) ligand, and (2) a complex consisting of a metal ion and a 1-hydroxy, ethylidene-1,1-diphosphonate liquid.

3,706,636
PREPARING PLATING BATH CONTAINING CHROMIC COMPOUND

John Edwin Bride, Mentor, Ohio, assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Feb. 19, 1971, Ser. No. 116,890
Int. Cl. C23b 5/06
U.S. Cl. 204—51 17 Claims

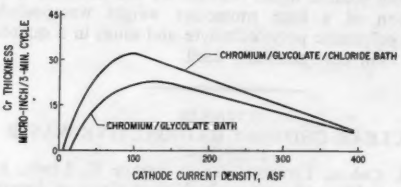


A bright decorative chromium plate of good appearance and durability is electrodeposited from a bath prepared from a solution containing trivalent chromic-compound. More particularly the bath is made from a preformed complex, or such complex is made in situ, and is a water-soluble trivalent chromic compound containing carboxylic acid constituents and halogen constituents. The prepared bath provides for excellent plating speed in the low current density region thus offering enhanced chromium thickness in recessed and difficult to plate areas.

3,706,637
CHROMIUM PLATING BATH CONTAINING CHROMIC COMPOUND

John Edwin Bride, Mentor, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 19, 1971, Ser. No. 116,891
Int. Cl. C23b 5/06
U.S. Cl. 204—51 13 Claims



A bright decorative chromium plate of good appearance and durability is electrodeposited from a bath containing a solution of chromic-compound. More particularly the bath contains a solution of a complex, water-soluble trivalent chromic compound containing carboxylic acid constituents and halogen constituents. The bath provides for excellent plating speed in the low current density region thus offering enhanced chromium thickness in recessed and difficult to plate areas.

3,706,638
CHROMIUM PLATING BATH FOR ROTARY RECEPTACLE PLATING

John Edwin Bride, Mentor, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,071
Int. Cl. C23b 5/06
U.S. Cl. 204—51 4 Claims

Desirable electrodeposition of bright chromium plate can be made on a substrate contained in a rotary receptacle immersed in a chromic plating medium. The medium contains a complex, water-soluble chromic compound for plating, which compound contains carboxylic acid constituents and halogen constituents. The plate obtained on the substrate within the rotary receptacle shows desirable, uniform chromium coverage over an extensive bright range.

3,706,639
REJUVENATED CHROMIUM PLATING MEDIUM CONTAINING CHROMIC COMPOUND

John Edwin Bride, Mentor, and Francis Huba, Painesville, Ohio, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,091
Int. Cl. C23b 5/06
U.S. Cl. 204—51 16 Claims

Bright decorative chromium plate can be obtained from chromium plating baths containing a chromic-compound for plating with such compound having at least carboxylic acid constituents and further exhibiting ready water solubility. Rejuvenation of such baths, with a sulfite component, will provide continued desirable plating performance, particularly in the low current density chromium plating range. Typically, only very minor amounts of such sulfite component, for example provided by addition to the bath or by formation in situ, are needed to insure extended high performance operating life of the thus chemically rebalanced trivalent chromium plating bath.

3,706,640

CHROMIUM PLATING FROM AN ORGANIC/AQUEOUS MEDIUM

James R. Brannan, Mentor, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 12, 1971, Ser. No. 117,102
Int. Cl. C23b 5/06
U.S. Cl. 204—51 8 Claims

Deposition of bright, decorative chromium plate is obtained from a chromium plating medium that is a homogeneous liquid blend of water with dipolar organic compound. The medium contains a complex, water-soluble trivalent chromic compound for plating that contains carboxylic acid constituents and halogen constituents and exhibits ready water solubility. The chromium deposits from such a medium exhibit enhanced plating coverage.

3,706,641

CHROMIUM PLATING WITH CHROMIC COMPOUND AND ORGANIC ADDITIVE

Francis Huba, Painesville, and John Edwin Bride, Mentor, Ohio, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,103
Int. Cl. C23b 5/06
U.S. Cl. 204—51 13 Claims

Deposition of bright decorative chromium plate with a chromium plating medium containing trivalent chromic compound is enhanced in the high current density area by addition to the medium of a minor amount of an organic additive. Such media most typically contain a chromic-compound also having at least carboxylic acid constituents and further exhibiting ready water solubility. The organic additives employed will enhance the chromium rate of deposition from such baths in the high current density area as well as plate thickness without deleterious effect to plating characteristics at the low current density region. Typically, only very minor amounts of polar aprotic substances and ethers and thioethers will provide such effect.

3,706,642

PREPARATION OF CHROMIUM PLATING BATH

James R. Brannan, Mentor, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,135
Int. Cl. C23b 5/06
U.S. Cl. 204—51 12 Claims

Deposition of bright, decorative chromium plate is obtained from a chromium plating medium prepared as a homogeneous liquid blend of water with dipolar organic compound. The medium is also made from a complex, water-soluble trivalent chromic compound for plating that contains carboxylic acid constituents and halogen constituents and exhibits ready water solubility. The medium thus provided can yield chromium deposits exhibiting enhanced plating coverage.

3,706,643

CHROMIUM PLATING BATH CONTAINING CHROMIC COMPOUND AND ORGANIC COMPONENT

Francis Huba, Painesville, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,163
Int. Cl. C23b 5/06
U.S. Cl. 204—51 11 Claims

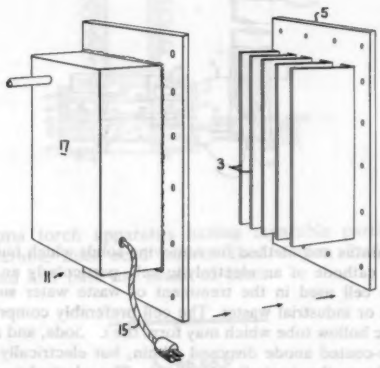
Deposition of bright decorative chromium plate from chromium plating media containing chromic compound, is enhanced in the low current density area, especially after working, by the presence in the medium of minor amounts of organic substance. The medium contains trivalent chromic-compound for plating which has at least carboxylic acid constituents and further exhibits ready water solubility. Such organic substance is exemplified by phenol, cresols, xylenols, resorcinol, urea, melamine, acrylamide, and aniline. Typically, only very minor amounts of such substances need be present in the medium.

3,706,644

METHOD OF REGENERATING SPINEL SURFACED ELECTRODES

Aleksandrs Martinsons, Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of abandoned application Ser. No. 60,060, July 31, 1970. This application Mar. 8, 1971, Ser. No. 121,692
Int. Cl. B01r 3/04; C01d 1/06
U.S. Cl. 204—98 32 Claims



A method is disclosed for treating electrodes, particularly after extended periods of use. This method is particularly useful for electrodes having spinel surfaces on electroconductive valve metal substrates, but may also be used for any electrode having an oxide surface on a valve metal substrate.

3,706,645

PROCESS INCLUDING PHOTOLYTIC ENHANCEMENT FOR ANODIC DISSOLUTION OF A GALLIUM ARSENIDE WAFER

Howard G. Lasser, Springfield, Va., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Sept. 30, 1971, Ser. No. 185,358
Int. Cl. H01k 7/52
U.S. Cl. 204—143 GE 8 Claims

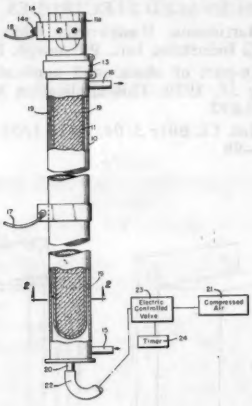
A photolytic process is used to enhance chemical or electrochemical anodic dissolution of one side of a p-type gallium arsenide wafer. Photons from a laser source are focused over 50% of the one side of the gallium arsenide wafer by means of fiber optics. The photons pass through a transparent container filled with a liquid electrolyte in which the wafer is totally immersed during the process. An incandescent light source completely floods the other side of the wafer that is opposite the one side. The other side of the wafer is made passive to the electrolyte by applying film, such as silicon dioxide thereto.

3,706,646

METHOD FOR REMOVING SOLIDS BUILD-UP FROM CATHODES OF ELECTROLYTIC CELL

Fred D. Gibson, Jr., 4546 Carriage Lane, Las Vegas, Nev.; Raymond C. Rhees, 657 6th Street, Boulder City, Nev.; James I. Gilson, 806 Park Lane, Henderson, Nev., and Bruce B. Halker, 147 Ivy, Henderson, Nev.

Filed Oct. 28, 1970, Ser. No. 84,779
Int. Cl. C02b *1/82*; C02c *5/12*; B01k *3/00*
U.S. Cl. 204—149 8 Claims



Apparatus and method for removing solids which build up on the cathode of an electrolytic cell, particularly an electrolytic cell used in the treatment of waste water such as sewage or industrial wastes. The cell preferably comprises a metallic hollow tube which may form the cathode, and a lead dioxide-coated anode disposed within, but electrically insulated from, the encircling cathode. The electrolyte flows through the cell in the space between the anode and encircling cathode. In the electrolytic treatment of organic and inorganic waste materials, various chemical deposits, particularly including calcium and magnesium salts of orthophosphate and carbonate as well as calcium and magnesium hydroxide tend to become deposited on the cathode surface and soon prevent proper cell operation. Such deposits are removed periodically by injecting pressurized air into the cell at preselected time intervals. During periods of air injection, a predetermined minimum amount of air is injected dependent upon the rate of liquid flow through the cell.

3,706,647

METHOD OF MAKING CYCLOHEXANOL AND CYCLOHEXANONE BY OXIDATION OF CYCLOHEXANE

Helmo Hardung-Hardung and Horst Corsepius, Frankfurt am Main, and Hansdieter Hofmann, Petterweil, Germany, assignors to Vickers-Zimmer Aktiengesellschaft Planung und Bau Von Industrieanlagen, Frankfurt am Main, Germany

Filed July 14, 1969, Ser. No. 841,309
Claims priority, application Germany, Aug. 28, 1968, P 17 93 249.9
Int. Cl. B01j *1/10*
U.S. Cl. 204—162 HE 14 Claims

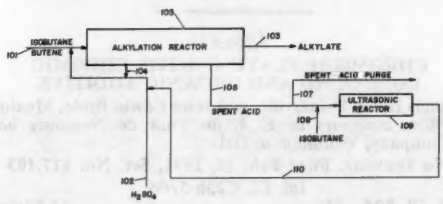
Process for the oxidation of cyclohexane to cyclohexanol and cyclohexanone wherein the oxidation reaction takes place in liquid phase in the presence of ionizing rays below about 170° C. and at elevated pressure. Improved yields of 86–88% in a conversion range of 5 to 9% are obtained.

3,706,648

REGENERATION OF SPENT ALKYLATION ACID

Hugh P. Hebert, Trenton, and Arnold H. Pelofsky, E. Brunswick, both of N.J., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed Oct. 28, 1970, Ser. No. 84,683
Int. Cl. B01j *1/10*; B07c *3/24*
U.S. Cl. 204—162 S 2 Claims



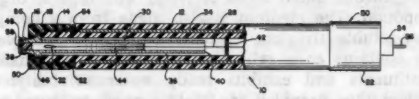
Disclosed in a process by which consumption of sulfuric acid alkylation catalyst is decreased and alkylate yield is increased by reacting the hydrocarbon contaminats contained within spent alkylation acid with an isoparaffin to yield alkylate and sulfuric acid. Ultrasonic energy is utilized to obtain intense mixing to promote the reaction of the contaminats with the isoparaffin in the acid phase. The resulting dispersion is more stable that emulsions obtained from mechanical mixing and affords a high surface area between the hydrocarbon and acid phases for increased alkylate formation and acid regeneration.

3,706,649

ELECTROCHEMICAL ELECTRODE

Richard E. Cosgrove, Los Angeles, and Irwin H. Krull and Charles A. Mask, Garden Grove, Calif., assignors to Beckman Instruments, Inc.

Filed June 29, 1970, Ser. No. 50,746
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 M 19 Claims



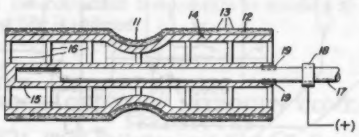
An electrochemical electrode for measuring the ion concentration or activity of solutions. The ion sensitive barrier of the electrode contains a macrocyclic compound, mineral oil, and a sufficient amount of a compound lipid to render the barrier substantially solid. Preferably, an aromatic component is included in the barrier to provide long term stability of the barrier. The macrocyclic compound is preferably valinomycin when the electrode is to be utilized for selectively measuring the potassium ion activity of solutions, and is preferably nonactin when the electrode is to be utilized for selectively measuring the ammonium ion activity of solutions.

3,706,650

CONTOUR ACTIVATING DEVICE

Steve Eisner, Schenectady, N.Y., assignor to Norton Company, Troy, N.Y.

Filed March 26, 1971, Ser. No. 128,240
Int. Cl. B23p *1/00*
U.S. Cl. 204—217 5 Claims



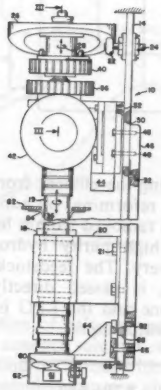
A rotatable activating device for contacting and activating a contoured surface during the electrodeposition thereon of a metal coating. The device has an outer surface composed of a non-conductive, porous, compressible, fluid-entrapping and circulating, fixed hard particle-supporting media contoured to complement the contours of the surface to be activated and an internal complete or partial core of a conductive material.

3,706,651

APPARATUS FOR ELECTROPLATING A CURVED SURFACE

James M. Leland, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 30, 1970, Ser. No. 102,723
Int. Cl. C23b *5/68*
U.S. Cl. 204—218 6 Claims



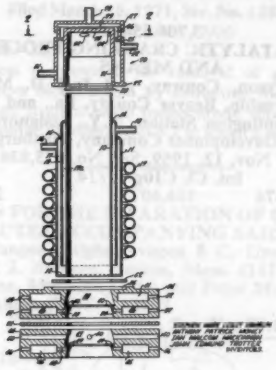
Apparatus for electroplating a curved surface of a workpiece wherein a relative rotatable and reciprocable motion is provided between the anode and the surface to be plated for controlling variations in plating thickness, with the rotary motion being precessed to provide a constant phase shifting to cancel out plating irregularities. The anode is fabricated of a plurality of longitudinally spaced annular segments, with means to independently control the current to each segment.

3,706,652

SEPARABLE PLASMA TORCH APPARATUS

Stephen Mark Lesley Hamblyn, Long Ditton, Anthony Patrick Money, Surbiton, Ian Malcolm Mackinnon, Kingston-upon-Thames, and John Edmund Trotter, Hampton, England, assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Oct. 14, 1970, Ser. No. 80,691
Claims priority, application Great Britain, May 20, 1970, 24,495/70
Int. Cl. B01k *1/00*
U.S. Cl. 204—312 11 Claims



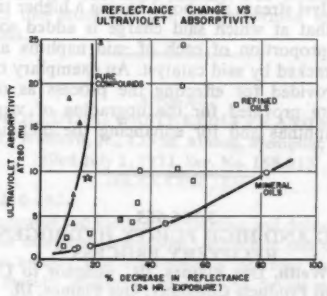
Plasma torch apparatus having separable parts such as separable inlet head and/or feed device. Preferably the head and base are made of brass.

3,706,653

LIGHT-COLORED HIGHLY AROMATIC OIL AND PROCESS OF PREPARATION

Ivor W. Mills, Media, Glenn R. Dimeler, West Chester, and Merritt C. Kirk, Jr., Thornton, Pa., assignors to Sun Oil Company, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 636,493, May 5, 1967. This application Oct. 27, 1969, Ser. No. 874,087
Int. Cl. C10g *39/00*
U.S. Cl. 208—64 12 Claims



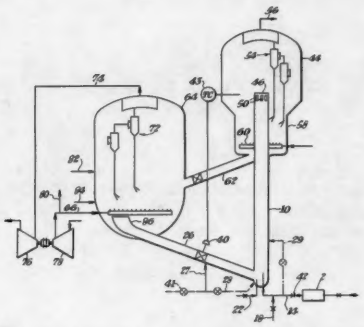
A novel light-stable rubber process oil containing 45–85 percent of aromatic hydrocarbons is obtained in high

yield from a 40–10,000 SUS (at 100° F.) naphthenic distillate by a two-step aromatization process. In the first step, with a sulfactive catalyst, the sulfur and nitrogen in the oil are greatly reduced and the aromatic content increases. In the second step, with Ni or noble metal catalyst, the aromatic content is further increased and the product oil has good color stability when aged in the presence of ultraviolet light. Oils produced by the process are especially useful when compounded with natural rubbers and synthetic elastomeric polymers (e.g., neoprene, GRS) which exhibit improved processability and physical properties when compounded with oils of high aromaticity.

3,706,654
FLUID CATALYTIC CRACKING PROCESSES AND MEANS

Millard C. Bryson, Conway, and Joel D. McKinney, Indiana Township, Beaver County, Pa., and James R. Murphy, Huntington Station, N.Y., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 12, 1969, Ser. No. 875,830
Int. Cl. C10g *11/14*
U.S. Cl. 208—74 **25 Claims**



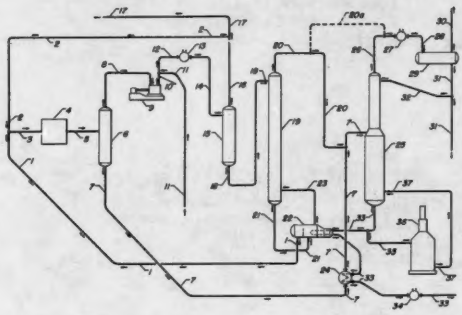
A process for cracking a principal hydrocarbon charge (such as a furnace oil or gas oil) capable of being cracked to gasoline in the presence of a fluidized cracking catalyst, said process comprising the steps of maintaining a predetermined range of temperatures within said catalyst stream, adding a naphtha diluent (gasoline type hydrocarbon) to said catalyst stream, controlling the partial pressure of said charge in said stream by maintaining a given ratio of said diluent to said charge, and adding said diluent to said catalyst stream at a point having a higher temperature than that at which said charge is added so that a significant proportion of each of said naphtha and said charge is cracked by said catalyst. An exemplary cracking plant is provided for effecting the process as outlined. Methods are provided for the upgrading of virgin and cracked naphthas and for enhancing the olefinic yields therefrom.

3,706,655
LPG AND HIGH PURITY HYDROGEN RECOVERY PROCESS

James D. Weith, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 11, 1971, Ser. No. 152,326
Int. Cl. C10g *5/04, 35/08, 39/00*
U.S. Cl. 208—82 **10 Claims**

Process for separating the effluent from a hydrocarbon conversion zone, i.e., reforming, by admixing fresh feed with a gaseous stream removed from a low pressure separator to produce a high purity hydrogen stream and

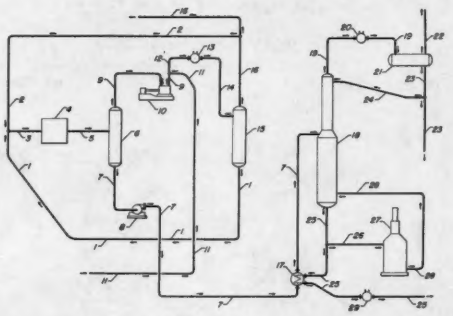


maximize LPG recovery. The LPG absorbed in the feedstock is removed before the feedstock is converted.

3,706,656
LPG AND HIGH PURITY HYDROGEN RECOVERY PROCESS

James D. Weith, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 11, 1971, Ser. No. 152,327
Int. Cl. C10g *5/04, 35/08, 39/00*
U.S. Cl. 208—82 **9 Claims**



Process for separating the effluent from a hydrocarbon conversion zone, i.e., reforming, by admixing fresh feed with a gaseous stream removed from a low pressure separator to produce a high purity hydrogen stream and maximize LPG recovery. The feedstock, containing absorbed hydrocarbons, is passed directly to the hydrocarbon conversion zone and the LPG is recovered from the low pressure separator liquid.

3,706,657
HYDRODESULFURIZATION OF CRUDE AND RESIDUAL OILS AT REDUCED SPACE VELOCITY

John A. Paraskos and Allen E. Somers, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 31, 1970, Ser. No. 103,198
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 **18 Claims**

A process for hydrodesulfurizing a crude oil or a residual oil comprises passing the oil and hydrogen over an

HDS catalyst, with the HDS catalyst cycle being limited by the maximum temperature that the reactor metals can withstand at the process pressure. As the hydrodesulfurization proceeds, metals from the feed oil are deposited on the catalyst until maximum possible metals loading on the catalyst is reached. As the process proceeds, a continual temperature rise is required to achieve the required sulfur removal until the maximum or constraint temperature is reached. According to this invention, it has been found that by maintaining the space velocity at a sufficiently low value the catalyst experiences maximum metals loading before the constraint temperature is reached so that full catalyst life is utilized.

3,706,658

HYDROCRACKING OF NITROGEN CONTAINING FEEDSTOCKS

Robert H. Hass, Fullerton, and Cloyd P. Reeg, Orange, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Aug. 21, 1970, Ser. No. 66,147
Int. Cl. C10g *13/02, 13/04, 13/06*
U.S. Cl. 208—111 19 Claims

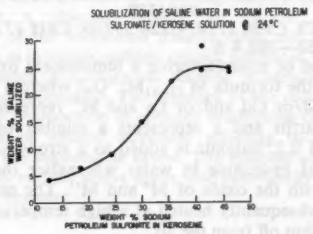
Hydrocarbons containing substantial amounts of organonitrogen compounds are subjected to hydrocracking, hydrofining, hydrogenation and the like in the presence of hydrogen over a catalyst comprising alumina and combinations thereof with silica, zirconia, magnesia and the like, such as aluminosilicates, with or without active metal components, in the presence of controlled minor amounts of water followed by the discontinuance of water addition. Further advantage is realized by cycling water addition and deletion to promote even higher average system activities.

3,706,659

BRINE SALT CONCENTRATION REGULATION USING MICELLAR DISPERSIONS

John A. Davis, Jr., Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Nov. 27, 1970, Ser. No. 93,201
Int. Cl. B01d *12/00*
U.S. Cl. 210—21 27 Claims


SOLUBILIZATION OF SALINE WATER IN SODIUM PETROLEUM SULFONATE/KEROSENE SOLUTION @ 24 °C
WEIGHT % SALINE WATER SOLUBILIZED
WEIGHT % SODIUM PETROLEUM SULFONATE IN KEROSENE

The concentration of salts of various brines is modified to obtain an aqueous solution of desired salt concentration by contacting the brines with a micellar dispersion to form a microemulsion upper phase and an aqueous bottom phase. A less concentrated salt solution will be contained in the resulting microemulsion than will be in the aqueous bottom phase. In the event that the higher concentration solution is desired, the aqueous bottom phase is decanted and recovered. If the low concentration salt solution is desired, the microemulsion is subjected to a physical or chemical change to reduce its solubilizing capacity, e.g., by cooling, and the resulting bottom aqueous phase is recovered. In either case, the micellar dispersion or components thereof are recovered and recycled for additional brine treatment. Any surfactant or cosurfactant dissolved in the water can be removed, if necessary, and a series of process trains can be used to obtain water of desired salinity. The process can be used to obtain potable water from salt solutions.

3,706,660

PROCESS FOR REMOVAL OF PARTICLE-FORMING PROTEINS FROM BLOOD SERA

James J. Hagan, Holmdel, N.J.; Edward E. Chanod, Staten Island, N.Y.; Robert S. Feldman, Howard Beach, N.Y., and Helmuth Cords, Princeton, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed March 25, 1971, Ser. No. 128,152
Int. Cl. B01d *12/00*
U.S. Cl. 210—21 8 Claims

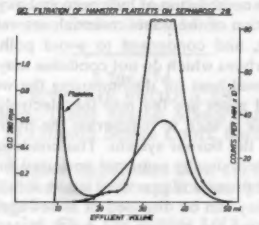
A process is provided for removal of particle-forming proteins from blood serum by extracting the serum with a halo-genated straight chain hydrocarbon solvent at a pH of within the range of from about 5.2 to about 5.6.

3,706,661

METHOD FOR THE SEPARATION OF CELLS FROM SOLUTES ACCOMPANYING SAID CELLS

Oddvar Tangen, Stigbergsvagen 8 C, Uppsala, Sweden; Herbert J. Berman, Boston, Mass. (142 Coolidge St., Brookline, Mass. 02146); and Peter Marfey, 9 Tudor Road, Albany, N.Y. 12203

Filed Oct. 5, 1970, Ser. No. 78,143
Int. Cl. B01d *15/08*
U.S. Cl. 210—24 13 Claims



A gel filtration method is applied to separate cells from the solutes present in their surrounding medium. The separation is accomplished by passing the cells through a column packed with a gel which retains all undesired components, and at the same time allows the cells to pass through the gel bed more rapidly. For clinical or other purposes the procedure can be performed under sterile conditions.

3,706,662

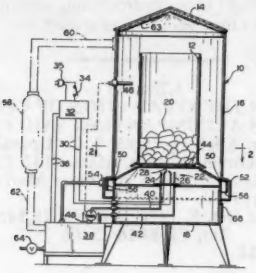
NON-POLLUTING WASTE REDUCER AND METHOD

Walker L. Wellford, Jr., 135 St. Albans, Memphis, Tenn.

Filed July 1, 1971, Ser. No. 158,813
Int. Cl. C02c *5/04*
U.S. Cl. 210—63 14 Claims

An apparatus and method for heating and decomposing organic and inorganic household, industrial and commercial wastes to quickly and economically decrease their volume without thereby polluting the air. The device comprises a housing with a removable cover for inserting refuse into the housing. With the cover in place the housing serves as a sealed treatment chamber for the waste. Heating of the wastes is accomplished by an ignition and burner system within the housing which combines hydrogen and oxygen gases and applies

the heat generated by their combustion directly to the waste material. The hydrogen and oxygen gases are manufactured by an electrolytic generator comprising cells such as the Knowles cell containing a suitable alkali electrolyte such as potassium hydroxide. The amount of oxygen fed to the burner from the electrolytic generator is limited so that all oxygen is combined with the hydrogen to produce heat, and no excess oxygen is available for oxidizing the waste material. A thermostatic valve responsive to a temperature sensor inside the housing continually limits the oxygen supply unless the housing temperature drops below a predetermined temperature, in which case the oxygen is increased until the temperature is restored. Conversely, more hydrogen is supplied to the burner than is necessary to combine with the oxygen in combustion, and the excess hydrogen reduces rather than oxidizes the waste material, resulting in the formation of hydrocarbon gases and carbon rather than carbon dioxide and ashes. The hydrocarbon gases, together with the water vapor which



results from the combustion of hydrogen and oxygen and from the decomposition of the waste material, are collected in the sealed housing, and condensed to avoid polluting the air. Those hydrocarbons which do not condense may be burned to provide additional heat for decomposing the waste material. The condensed gases are fed into the electrolytic generator where the water is used to regenerate the hydrogen and oxygen gases for the burner system. The condensed hydrocarbons may be periodically removed and used for commercial purposes if the process is practiced on an industrial scale, or alternatively they can be disposed of as sewage. The housing includes a grating for holding the waste material above the burner, and a base portion located below the grating for collecting any solid residues which are not vaporized in the heating process and drop through the grating into the base portion. These solid materials are periodically removed from the system and either used for commercial purposes or disposed of.

3,706,663

METHOD OF CONTROLLING ODOR

Oliver H. Peterson, Charles City, Iowa, assignor to Salsbury Laboratories, Charles City, Iowa

Filed Feb. 25, 1971, Ser. No. 119,060
Int. Cl. C02b *3/06*
U.S. Cl. 210—64 **12 Claims**

A method of controlling the odors emanating from large bodies of animal waste such as are found in feedlots and in the sumps of animal houses. The animal waste is treated with a compound capable of selectively inhibiting the formation of malodorous compounds which normally result from the natural decomposition of the animal waste. Preferred compounds are the sulfa drugs, and sulfaguanidine has been found to be particularly useful. The compound is typically applied as a solid mixed with an inert diluent when used on a feedlot, and as an acid solution when used to treat the sewage in the sump of an animal house.

3,706,664

SEWAGE DISPOSAL SYSTEM

Quentin E. Thompson, Belleville, Ill., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Oct. 22, 1970, Ser. No. 83,154
Int. Cl. C02c *1/00*
U.S. Cl. 210—65 **12 Claims**

An improved, self-contained sewage disposal system which utilizes water immiscible synthetic esters as transport fluids to carry sewage from its source to a central separation and disposition system. The selected esters separate readily from the liquid and solid sewage, and are reclaimed and recirculated within the system, while sewage is disposed of by incineration or other means. Preferred transport fluids include dibasic acid esters such as dioctyl adipate and diisodecyl adipate, and fatty acid esters of C_4 to C_{13} monohydric alcohols.

ERRATUM

For Class 252—42.7 see:
Patent No. 3,706,632

3,706,665

PREPARATION OF MAGNESIUM-CONTAINING LUBRICATING OIL DETERGENTS

Cyril Ove Robert Bell, Newport, and Neville Murray Jones, Blackwood, England, assignors to Monsanto Chemicals Limited, London, England

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,136
Claims priority, application Great Britain, Nov. 23, 1969, 57,391/69
Int. Cl. C10m *1/44, 11/48*
U.S. Cl. 252—32.7 HC **15 Claims**

Detergents for lubricating oils are prepared by reacting a mixture of a phosphosulfurized polyolefin and an alkyl phenol sulfide or an alkylphenol with an alkanol solution of an alkoxide of magnesium or a carbonated alkoxide of magnesium.

3,706,666

METHOD OF MANUFACTURING A LUMINESCENT OXYSULPHIDE

Roelof Egbert Schull, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Mar. 12, 1971, Ser. No. 123,866
Claims priority, application Netherlands, Mar. 25, 1970, 7004337
Int. Cl. C09k *1/14*; C22b *59/00*; C01f *17/00*
U.S. Cl. 252—301.4 S **7 Claims**

A method of manufacturing a luminescent oxysulphide defined by the formula $M'_{(2-x)}M_x''O_2S$ wherein M' represents Y and/or Gd and/or La and M'' represents one of the rare earths and x represents a number of between 0.0002 and 0.2. Sulphur is added to a strong solution of alkali metal hydroxide in water whereafter the solution is mixed with the oxide of M' and M''. The mixture obtained is subsequently heated at a high temperature while it is being shut off from the air.

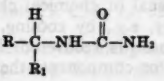
3,706,667

MONOSUBSTITUTED UREAS IN LUBRICATING COMPOSITIONS

Aubert Y. Coran, Akron, Ohio, and Billy D. Vineyard, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,643
Int. Cl. C10m *1/20, 1/32*
U.S. Cl. 252—51.5 A **10 Claims**

Varnish-removing additives for lubricating compositions comprising monosubstituted ureas having the formula



wherein R is hydrogen, alkyl or alkenyl and R_1 is alkyl or alkenyl, and the sum of the carbon atoms in R and R_1 is from about 5 to about 25.

3,706,668

POLYPHENYL ETHER LUBRICATING COMPOSITIONS

Frank S. Clark, 4561 McPherson Ave., St. Louis, Mo. 63108

No Drawing. Filed May 28, 1971, Ser. No. 148,124
Int. Cl. C10m *1/44*
U.S. Cl. 252—49.9 10 Claims

Composition comprising polyphenyl ethers or mixtures thereof and phenoxyphenylphosphinic acids exhibit improved lurbicating properties over wide temperature ranges.

3,706,669

COMPOSITION AND METHOD FOR THE DISSOLUTION OF GYPSUM

Tommy R. Gardner, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

No Drawing. Filed Mar. 16, 1970, Ser. No. 20,046
Int. Cl. C23g *1/02*
U.S. Cl. 252—82 11 Claims

The present invention relates to a composition and method for the dissolution of gypsum wherein said gypsum is contacted with a solution which converts it into a dispersible sludge.

3,706,670

BLEACHING COMPOSITION

Frederick William Gray, Summit, N.J., assignor to Colgate-Palmolire Company, New York, N.Y.

Continuation of Ser. No. 679,506, Oct. 31, 1967, abandoned. This application Dec. 28, 1970, Ser. No. 102,046
Int. Cl. C11d *7/54*
U.S. Cl. 252—95 17 Claims

This disclosure relates to bleaching laundry compositions comprising a chlorine bleach, an optical brightener, preferably of the sulfonated triazole class, and a reducing agent such as inorganic sulfites, organic sulfinates, water-soluble phosphites, and inorganic alkaline materials combined with hydrogen peroxide. The presence of the reducing agent enables the composition to enhance brightening of the fabric being cleaned without adversely affecting the bleaching thereof to any appreciable extent. The optional addition of a detergent or surface active agent, also beneficially affects the brightener intensity.

3,706,671

BLEACHING AGENTS AND ADDITIVES

Frederick Edward Hardy, Newcastle-upon-Tyne, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Original application Apr. 2, 1970, Ser. No. 25,292. Divided and this application Feb. 3, 1972, Ser. No. 223,384
Int. Cl. C11d
U.S. Cl. 252—99 9 Claims

The invention relates to novel N-halo-N-alkyl-o-sulfobenzamides. These compounds are useful in bleaching compositions and methods. Some are activators for peroxygen bleaching agents, and some have bleaching activity themselves.

3,706,672

DETERGENT POLYELECTROLYTE BUILDERS

Preston Kuhn Martin, Fanwood, and Richard Howard Kelly, West Orange, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Dec. 8, 1970, Ser. No. 96,259
Int. Cl. C11d *7/06*
U.S. Cl. 252—156 9 Claims

Synthetic detergents are prepared having improved cleaning power using polyacrylic acid salts. For example, sodium polyacrylate of controlled molecular weight is an excellent substitute for the "suspect" phosphate builder-sequestrant presently used in household detergent compositions. Regardless of the merit of the charge that detergent phosphates are the primary cause of eutrophication in our lakes and rivers, the search for phosphate-free detergents intensifies daily. The polyacrylates described herein provide a very effective and attractive answer to the controversy.

3,706,673

AQUEOUS COMPOSITION FOR DEPOSITING PHOSPHORS

Eugene Wainer, Cleveland, Ohio, assignor to Horizons Incorporated, a Division of Horizons Research Incoroprated

Division of Ser. No. 826,704, May 21, 1969, Pat. No. 3,597,259. This application Feb. 12, 1971, Ser. No. 155,662
Int. Cl. H01c *7/08*; C09k *1/12*
U.S. Cl. 252—501 4 Claims

The preparation of phosphors such as those based on zinc sulfide and/or cadmium sulfide in the form of very fine particles which include not only the sulfide but also the activator and mineralizer required to make this an active material and the deposition of such an active material from a clear solution containing the phosphor, mineralizer and dopant necessary to complete an active material, into the pores of a suitable substrate, thereby producing the essential element for a high resolution information retrieval transducer.

3,706,674

ENZYME PRODUCTS

Sidney G. Clark, 12800 Mason Manor, and Harold E. Feierstein, 17 Country Squire Court, both of St. Louis, Mo. 63141

No Drawing. Original application Sept. 19, 1968, Ser. No. 760,981. Divided and this application May 15, 1970, Ser. No. 48,657
Int. Cl. C11d *3/066, 1/12*
U.S. Cl. 252—527 4 Claims

This invention relates to detergent compositions containing particulate enzyme products; these products contain enzymes produced by *Bacillus subtilis*, have a bulk density of from about 0.25 gram/cc. to about 2.0 grams/cc. and have a critical particle size, such that no visible color change results when said enzymes are incorporated into normally white detergent compositions.

3,706,675

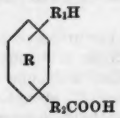
DETERGENT COMPOSITION WITH THERMO-CONTROLLED FOAMING CAPACITY

Hans Barth, Kleve, Martin Knausenberger, Hockenheim, Henner Lange and Hans-Udo Menz, Hamburg, and Wilhelm Griess, deceased, late of Mannheim-Neckarau, Germany, by Irene Griess-Tomtschuk and Hanna Gordt-Griess, legal representatives, Mannheim-Feudenheim, Germany, assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 14,783, Feb. 26, 1970, which is a continuation of application Ser. No. 669,845, Sept. 22, 1967. This application Oct. 27, 1970, Ser. No. 84,454
Claims priority, application Germany, Sept. 23, 1966, U 13,106
Int. Cl. C11d *1/04, 3/065, 9/32*
U.S. Cl. 252—539 4 Claims

Foaming at low washing temperature is obtained without over-foaming at high temperatures. the foam-control-

ling agent is an effective amount of a material selected from the group consisting of cyclized fatty acids and sodium salts of such acids, said acids being essentially obtained from cyclization of unsaturated C_{12}–C_{33} fatty acids by any suitable process known in the art, and being a mixture of acids having the formula:



wherein R represents a saturated or unsaturated six-membered carbon ring; R_1 is a hydrocarbon chain having from 0–12 carbon atoms, R_2 is a hydrocarbon chain having from 0–21 carbon atoms, the total number of carbon atoms of R_1 and R_2 being at least 5.

It is applicable in compositions essentially comprising 10–30% by weight of a water-soluble anionic detergent including soap and one to five times of said amount of a polyphosphate builder. Optionally nonionic synthetic detergents can be included.

ERRATUM

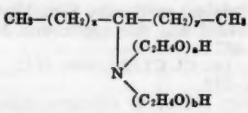
For Class 156—336 see:
Patent No. 3,706,950

3,706,676
ETHOXYLATED AMINO ALKANES AS SURFACTANTS

Norman W. Franke, Penn Hills Township, Allegheny County, Stanley C. Paviak, Shaler Township, Allegheny County, and Warren K. Porter, Jr., Richland Township, Allegheny County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Dec. 26, 1968, Ser. No. 787,212
Int. Cl. C11d *3/26*
U.S. Cl. 252—544 **4 Claims**

Surface active agents are formed of substantially uniform mixtures of the various amine isomers of ethoxylated aminoalkanes represented by the formula:



wherein the total number of carbons in the linear paraffin chain is from about 8 to 22; wherein x is a whole number from about 0–19 and y is a whole number from about 0–19; and wherein a and b are each greater than zero, the sum of which is greater than about 4.

3,706,677
POLYXYLYLIDENE ARTICLES

Ritchie A. Wessling, Midland, and Ray G. Zimmerman, Shepherd, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 617,832, Feb. 23, 1967, now Patent No. 3,532,643. This application Oct. 5, 1970, Ser. No. 78,154
The portion of the term of the patent subsequent to Sept. 10, 1985, has been disclaimed
Int. Cl. C08f *47/00*
U.S. Cl. 260—2 H **14 Claims**

The compositions are of the class of polyxylylidene having a high degree of polymerization in the form of coatings, films, fibers or foams. Such articles are prepared from polyelectrolytes comprising viscous aqueous solutions of p-phenylene dimethylene bis(dialkyl sulfonium salts), or the analogous hydroxide, by shaping such viscous aqueous solutions, for example by casting a wet film or extruding the solution into a basic aqueous bath, then drying, sometimes with heating, to convert the sulfonium polyelectrolyte to a polyxylylidene in the form of a film, coating, fiber or foam.

3,706,678
HYDROPHILIC POLYURETHANE FOAMS PREPARED FROM BIURET CONTAINING POLYISOCYANATES

Werner Dietrich, Cologne, Stammheim, and Karlheinz Andres, Cologne, Flittard, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,711
Claims priority, application Germany, Aug. 7, 1969, P 19 40 182.2
Int. Cl. A01c *1/04*; C08g *22/44*
U.S. Cl. 260—2.5 AD **7 Claims**

A process is provided for the production of open celled foam resins having a bulk density of from about 6 to about 15 kg./m.^{3} from organic polyisocyanates, organic compounds which contain at least two hydrogen atoms reactive with NCO groups, water and, if desired, other additives, characterized in that the organic polyisocyanates contain biuret groups and the water used for the foaming reaction is added in quantities of from about 20 to about 100 parts by weight per 100 parts by weight of the organic compounds which have at least two hydrogen atoms reactive with NCO groups.

3,706,679
VINYL RESIN BLOWABLE INTO A RIGID SMOOTH SKIN MICROCELLULAR PROFILE

Thomas E. Hopton, Stow, and Robert P. Socha, Lakewood, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 6, 1970, Ser. No. 61,816
Int. Cl. C08f *47/10*, *45/62*, *29/18*
U.S. Cl. 260—2.5 E **9 Claims**

A composition for and method of making a rigid impact resistant microcellular, whittlable and nailable woodlike structure having a smooth and integral skin.

3,706,680
FOAMED POLYURETHANES PREPARED FROM DIPHENOLS AND POLYISOCYANATES

Llewellyn Delphin Booth, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 781,261, Dec. 4, 1968. This application Nov. 30, 1970, Ser. No. 93,808
Int. Cl. C08g *22/44*, *22/06*
U.S. Cl. 260—2.5 AM **5 Claims**

The invention concerns polyurethanes prepared from diphenols and polyisocyanates. It relates more particularly to polyurethane foams of diphenols and polyisocyanates.

3,706,681
PROCESS FOR STABILIZING A MECHANICALLY FROTHED URETHANE FOAM BY USING A SILICON SURFACTANT COMPOSITION

Richard A. Bachura, Midland, Mich., assignor to Dow-Corning Corporation, Midland, Mich.

No Drawing. Filed Mar. 4, 1971, Ser. No. 121,134
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AH **5 Claims**

The preparation of mechanically frothed polyurethane foams using a composition consisting essentially of a mixture of 1 to 10 parts by weight of a copolymer composed of SiO_2 units and units selected from the group consisting of $(CH_3)_3SiO_{1/2}$ and $Q(CH_3)_2SiO_{1/2}$ units, wherein Q is a solubilizing group, and 0.1 to 2 parts by weight of a silicone-glycol copolymer is disclosed.

3,706,682
HOT TOPS AND MIXTURE OF MATERIALS THEREFOR

Bertil Hilmer Allvin, Asgatan, Sweden, assignor to Enn Vallak, Geneva, Switzerland

No Drawing. Filed Jan. 25, 1971, Ser. No. 109,647
Claims priority, application Sweden, Feb. 2, 1970, 1,322
Int. Cl. B28b 7/36; C08f 45/18
U.S. Cl. 260—17.2 4 Claims

The basic idea of the invention is to provide a wall material for the hot top having such a composition that the surface contacting the molten steel or other metal will be covered with a smooth, gastight, thin, vitreous mineralic layer when contacting the molten steel or metal. The wall material is made from a mixture of granular or powdered aerated concrete or porous concrete and organic fibre material such as wood meal, sawdust, mechanical wood pulp and a binder, and according to the invention the mixture also comprises sand of such a rate of refractability that the melting temperature of the sand is lower than the temperature of the molten metal, said sand, under the influence of the heat from the molten metal, providing a thin vitreous mineralic layer.

3,706,683
CROSS-LINKED NITROGEN- AND CHLORINE-CONTAINING CELLULAR PLASTICS AND A METHOD FOR THE PREPARATION THEREOF

Herwart C. Vogt, Grosse Ile, and Pauls Davis, Gibraltar, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Feb. 26, 1971, Ser. No. 119,386
Int. Cl. C08f 47/10, 29/14
U.S. Cl. 260—2.5 R 18 Claims

Cross-linked cellular plastics having either open or closed cell structures are prepared from chloronitrosylated hydrocarbon polymers, having a chlorine content of from 0.5 to 73 percent by weight and a nitrogen content of from 0.01 to 5 percent by weight. The resulting cellular plastics possess improved physical properties.

3,706,684
TRAFFIC PAINT COMPOSITIONS

John A. Lopez, Marlton, N.J., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 756,327, Aug. 29, 1968, abandoned. This application June 11, 1971, Ser. No. 152,390
Int. Cl. C08g 30/12
U.S. Cl. 260—18 EP 4 Claims

Rapid-dry, one-package, epoxy traffic paint compositions which require no curing agent and which exhibits reduced dirt pick-up comprise (1) an organic solvent, (2) a pigment and (3) a condensation product comprising near equal molar ratios of a polyepoxide and a dimer acid wherein the polyepoxide is a blend of two separately prepared glycidyl polyethers of a polyhydric phenol, one a liquid, the other a solid.

3,706,685
CROSS-LINKABLE POLYMER COMPOSITIONS COMPRISING ETHYLENICALLY UNSATURATED POLYMER

Karl Brack, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed July 1, 1971, Ser. No. 159,044
Int. Cl. C08f 11/00, 11/02
U.S. Cl. 260—22 R 9 Claims

Cross-linkable polymer compositions are described which comprise an ethylenically unsaturated polymer, the sultone adduct of a tertiary amine and a precursor of a polyfunctional nitrile N-oxide or nitrile imine. Typical sultone adducts are the 1,3-propane sultone adducts of triethylamine, triethylenediamine, N-methyl morpholine and quinuclidine. These compositions, which cross-link on heating, are useful as sealants and adhesives and in coating compositions.

3,706,686
PROCESSING AID FOR POST-CHLORINATED POLYVINYL CHLORIDE

Kenneth L. Eilers, Irvington, N.Y., and Adam F. Kopacki, Westwood, N.J., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Feb. 12, 1971, Ser. No. 115,087
Int. Cl. C08f 29/22
U.S. Cl. 260—23 XA 13 Claims

There are disclosed compositions of post-chlorinated polyvinyl chloride intimately admixed with a processing aid comprising a polyacrylate modified-polyvinyl chloride which is prepared by polymerizing an acrylate ester monomer, such as methyl methacrylate, in the presence of particles of polyvinyl chloride which have been previously prepared by means of a suspension polymerization procedure. These new compositions permit faster calendering with improved gloss and better surface qualities on extrusion as compared with post-chlorinated polyvinyl chloride which has not been modified in this manner.

3,706,687
URETHANE FOAM PRODUCTION AND CATALYST THEREFOR COMPRISING A MIXTURE OF AN ALIPHATIC TERTIARY AMINE COMPOUND AND A TERTIARY AMINE SALT OF AN ALKYLARYLSULFONIC ACID

Henryk S. Rudzki, Capo le Case 56, Rome, Italy

No Drawing. Continuation of application Ser. No. 788,842, Jan. 10, 1969, which is a continuation-in-part of abandoned application Ser. No. 715,554, Mar. 25, 1968, which in turn is a continuation-in-part of abandoned application Ser. No. 698,693, Jan. 18, 1968. This application Aug. 19, 1970, Ser. No. 65,347
Int. Cl. C08g 22/38
U.S. Cl. 260—2.5 AC 33 Claims

Production of polyurethane foams by reaction of at least one polyfunctional isocyanate compound with at least one polyfunctional compound containing an active hydrogen group in the presence of a novel catalyst composition comprising a particular mixture of at least one aliphatic amine and at least one alkylarylsulfonic acid which has been neutralized with a tertiary amine and also in the presence of a blowing agent for the reaction.

3,706,688
GLASS COLOR FILTER FOR USE UNDER DAYLIGHT COLOR FLUORESCENT LIGHT

Takashi Matsuura and Mitsuo Chikano, Tokyo, Japan, assignors to Hoya Glass Works, Tokyo, Japan

Filed Sept. 20, 1971, Ser. No. 181,782
Claims priority, application Japan, Sept. 18, 1970, 45/81,805
Int. Cl. F21v 9/00; C03c 3/10, 3/30
U.S. Cl. 252—300 1 Claim

A glass color filter suitable for use in color photography under daylight color fluorescent light is prepared from a glass composition comprising 100 parts of base glass composed of, by weight, 50–70% silicic acid anhydride, 8–17% lead oxide, 13–23% of either one or both of sodium oxide and potassium oxide, 3–12% of either one or both of calcium oxide and magnesium oxide, and 0.2–0.5% arsenic oxide, and a coloring agent composed of, by

weight, 2.0–4.0% cerium oxide, 2.5–5.0% titanium oxide, 0.001–0.02 nickel oxide, 0.8–2.2% manganese dioxide, and 0.3–2.5% neodymium oxide.

3,706,689

PROCESS FOR THE PREPARATION OF A Sr^{90}–Y^{90} BETA SOURCE IN A RADIATION HAZARD FREE MANNER

Arlie W. Haskins, Alexandria, Va., assignor to Nuclear Associates, Inc.

No Drawing. Filed May 3, 1968, Ser. No. 726,566
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 R 3 Claims

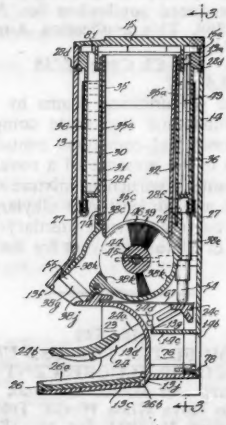
Process for the preparation of a Sr^{90}–Y^{90} beta source in a substantially radiation hazard free manner comprising, in combination, the steps of providing a radioactive material containing Sr^{90}; separating at least part of the Sr^{90} from the radioactive material to provide a Sr^{90} rich material which emits only low energy beta rays; fabricating a source from the low energy beta ray emitting Sr^{90} rich material; storing the fabricated source for a period sufficient to permit the Sr^{90} therein to become an equilibrium mixture of Sr^{90}–Y^{90}; and utilizing the resulting stored fabricated source as a Sr^{90}–Y^{90} beta source. This process is useful in fabricating Sr^{90}–Y^{90} beta sources with a minimum of shielding. Such beta sources are in turn useful in medical applications of radioactivity such as radioactive eye applicators and nasopharyngeal applicators.

3,706,690

LATHER MAKING APPARATUS

John P. Duve, Brookfield, and Stanton H. Petry, Arlington Heights, both of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed June 11, 1970, Ser. No. 45,425
Int. Cl. B01d ; B67d *5/58*; B01f
U.S. Cl. 252—359 E 20 Claims



A motor driven appliance for making soap lather by rotating a cylindrical brush in contact with a bar of soap in the presence of water. The lather is generated in a chamber nested beneath a water reservoir having means for dispensing the water into the chamber simultaneously with the actuation of the motor which rotates the brush. The vertically extending passageway for receiving the bar of soap is disposed within the water reservoir and connects to the top of the generating chamber. The chamber is sloped away from the lather discharge opening and a dam is provided to prevent the discharge of accumulated liquid along with the lather.

3,706,691

DEPOTTING SOLVENT

James V. Duffy, Beltsville, and Porter W. Erickson, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 4, 1970, Ser. No. 69,958
Int. Cl. B01f *1/00*; C23g *5/00*
U.S. Cl. 252—364 10 Claims

Encapsulating (potting) compositions which contain a linkage that is susceptible to hydrolytic cleavage; i.e., polyamides, polyesters and polyester base type polyurethanes, and which have deteriorated due to exposure to a hot, moist atmosphere are dissolved by contacting with a solvent comprising a solution of benzyltrimethylammonium hydroxide preferably containing a constituent selected from the group consisting of (a) tetrahydrofuran and acetone, (b) methylene chloride (c) methylene chloride and acetone and (d) N-methyl-2-pyrollidone.

3,706,692

CATALYST FOR PREPARATION OF UNSATURATED ALDEHYDES AND ACIDS

Jamal S. Eden, Akron, Ohio, assignor to The B.F. Goodrich Company, New York, N.Y.

Division of Ser. No. 838,349, July 1, 1969, Pat. No. 3,634,502. This application April 5, 1971, Ser. No. 131,501
Int. Cl. B01j *11/82*
U.S. Cl. 252—432 3 Claims

Unsaturated aldehydes and acids as acrolein and acrylic acid or methacrolein and methacrylic acid are prepared in excellent yields and at improved rates by the oxidation of propylene or isobutylene in the presence of a versatile catalyst containing molybdenum oxide, tellurium oxide and a boron phosphate. Calcination of the boron phosphate alone or in the catalyst mixture about 450° C. favors formation of aldehydes.

3,706,693

HYDROCARBON CONVERSION CATALYSTS

Grant A. Mickelson and Darryl L. Jones, Yorba Linda, and William J. Baral, Long Beach, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed July 10, 1970, Ser. No. 53,814
Int. Cl. B01j *11/82, 11/40*
U.S. Cl. 252—435 18 Claims

Hydrocarbon nconversion catalysts having markedly improved characteristics are prepared from intimate admixtures of foraminous alumina-containing refractory oxides and ion exchangeable aluminum-containing composites, such as crystalline alumiosilicate zeolites, silica-alumina cogels, and the like, upon impregnation with a strong acidic solution containing Group VIII and Group VI metal compounds and an acid of phosphorus at a pH below 3.

3,706,694

CATALYTIC HYDROCRACKING

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Continuation-in-part of application Ser. No. 761,321, Sept. 20, 1968, which is a continuation-in-part of application Ser. No. 681,561, Nov. 8, 1967. This application Mar. 9, 1970, Ser. No. 17,974
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z 19 Claims

A method for preparing crystalline aluminosilicate zeolite catalysts having a low alkali metal content in the zeolite and containing (1) a polyvalent metal cation, preferably an iron group metal and (2) a hydrogenation component, comprises pre-calcining or pre-steaming the polyvalent metal containing zeolite prior to addition of the hydrogenation component. The invention also includes the subsequent introduction of additional stabilizing element following the pre-calcining or pre-steaming but

prior to addition of the hydrogenation component. The catalysts find particular utility in hydrocracking and hydrotreating processes.

3,706,695

METHOD OF PREPARING A SILICONE EMULSION AND REGENERATING SAME AND ELECTRICALLY CONDUCTIVE PRODUCT

David J. Huebner, Williams Township, Bay County, and Michael D. Meddaugh, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Oct. 12, 1970, Ser. No. 80,179
Int. Cl. H01b *1/04*; C08g *31/34, 53/22*
U.S. Cl. 117—226 20 Claims

An emulsion prepared by dissolving a surface active sulfonic acid in water, adding polydiorganosiloxane, homogenizing the mixture, heating to polymerize the siloxane, adding a nonionic emulsifying agent, neutralizing, adding carbon black, and thereafter adding an organometallic catalyst and an alkoxysilane, provides a heat stable electrically conductive silicone rubber when the water is removed.

ERRATA

For Classes 260—2 H through 260—2.5 AC see: Patents Nos. 3,706,677 through 3,706,687, inclusive

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3,706,696

GROUTING COMPOSITION

Frank E. Bernett, Yardley, Pa., and Robert J. Kleinhans, Kingston, N.J., assignors to Tile Council of America, Inc.,, New York, N.Y.

Continuation-in-part of Ser. No. 732,081, May 27, 1968, abandoned. This application Jan. 8, 1971, Ser. No. 105,068
Int. Cl. C04b *19/02*; C08d *7/00*; C08f *29/00*
U.S. Cl. 260—29.7 E 8 Claims

A novel and improved grouting composition is provided having a viscosity of 50,000 to 1,200,000 cps., a water retention value of 10 to 40, a filler content of from about 75 to 88 percent and a volatile component content of from 8 percent to 20 percent which comprises an admixture of a water resistant polymer emulsion having a solids content of at least 40 percent and a non-hydraulic water insoluble filler having an average particle size not greater than 100 mesh nor less than 20 microns, which when measured as an aqueous slurry, at a viscosity of between 400,000 to 500,000 cps., has a water to filler volume ratio not greater than one and a slurry flow not greater than 120 percent. Additionally, a method of setting and grouting tile is provided in which said novel composition is employed.

3,706,697

EMULSION POLYMERIZATION OF ACRYLOXYALKYLSILANES WITH ALKYLACRYLIC ESTERS AND OTHER VINYL MONOMERS

Richard H. Backderf, West Richfield, Ohio, assignor to The B.F. Goodrich Company, New York, N.Y.

Filed Sept. 3, 1970, Ser. No. 69,431
Int. Cl. C08f *11/04*; D21h *1/40*
U.S. Cl. 260—29.2 M 9 Claims

Aqueous emulsion polymerization of acryloxyalkyl alkoxysilane, alkyl acrylic esters, and optionally other vinyl monomers produces copolymers curable at low temperatures. The silane may be introduced to the polymerization after a portion of the other monomers are polymerized. Heat curing improves the solvent resistance of cured as-cast films of the latex. Silanol curing catalysts enhance the cure rate. Paper coatings are comparison tested for wet and dry tensile. Exemplary is a latex of a polymer of 40.7 percent 2-ethylhexyl acrylate, 18.5 percent vinylidene chloride, 37.6 percent vinyl chloride and 3.2 percent gamma-methacryloxypropyl trimethoxysilane.

3,706,698

PROCESS FOR THE DYEING OF SYNTHETIC POLYAMIDES IN BULK

Arthur Buehler, Rheinfelden, and Felix Steiulin, Dornach, Solothurn, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Mar. 23, 1970, Ser. No. 22,040
Claims priority, application Switzerland, Apr. 29, 1969, 6,560/69
Int. Cl. C08g *53/04*
U.S. Cl. 260—37 NP 2 Claims

The invention relates to a process for dyeing synthetic linear polyamides in bulk, wherein a 1:1-chromium complex compound of a monoazo dyestuff that contains at least one sulphonic acid group or a salt thereof is used.

3,706,699

MANUFACTURE OF MOULDING MATERIAL STARTING FROM POLYETHYLENE TEREPHTHALATE

Andre Jan Conix, Antwerp, and Lambert Gaston Jeurissen, Mortsel, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Continuation of application Ser. No. 739,184, June 24, 1968. This application May 11, 1970, Ser. No. 37,392
Claims priority, application Great Britain, June 29, 1967, 30,140/67
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R 24 Claims

A process for the preparation of and a novel moulding material comprising polyethylene terephthalate having an inherent viscosity of 0.65 dl./g. measured at 25° C. in a 60:40 mixture of phenol and tetrachloroethane in admixture with from about 0.1 to 10% by weight of a fusible homopolymer and from about 0 to 1% by weight of a finely divided solid mineral substance is described.

3,706,700

USE OF BIS-METHYLENE MALONIC ACID NITRILES IN LIGHT SENSITIVE MATERIALS

Rudolph Kirchmayr, Binningen, Basel-Land, Hans Jakob Peterli, Fullinsdarf, Basel-Land, and Hansjorg Heller, Riehen, Switzerland, assignors to Ciba-Geigy Corporation

No Drawing. Original application July 18, 1966, Ser. No. 565,725, now Patent No. 3,546,270, dated Dec. 8, 1970. Divided and this application July 24, 1970, Ser. No. 64,861
Claims priority, application Switzerland, July 23, 1965, 10,366/65; July 15, 1966, 10,201/66
Int. Cl. C08b *27/68*; C08f *45/60*; C08g *51/60*
U.S. Cl. 106—178 12 Claims

Methylene malonic acid nitriles, useful as UV absorbers, are employed in light sensitive materials.

3,706,701

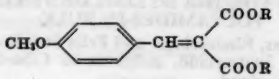
STABILIZATION OF POLYMERS

Peter Vincent Susi, 17 Starlit Drive, Middlesex, N.J. 08846

No Drawing. Continuation-in-part of application Ser. No. 389,210, Aug. 12, 1964, which is a continuation-in-part of application Ser. No. 362,182, Apr. 23, 1964, both now abandoned. This application June 15, 1971, Ser. No. 153,447
Int. Cl. C08f *45/58*; C08g *51/58*; C08b *27/66*
U.S. Cl. 260—45.85 V 8 Claims

Stabilization of organic plastic substrates versus the degrading effects of ultraviolet light is effected by incorporating therein stabilizing amounts of a p-methoxy-

benzylidenemalonic acid diester represented by the formula:



where R is a methyl or ethyl radical.

3,706,702

LINEAR AROMATIC COPOLYTHIOETHERS

Josef Studinka, Zurich, and Rudolf Gabler, Uitikon-Waldegg/Zurich, both of Switzerland, assignors to General Electric Company

Filed March 2, 1970, Ser. No. 15,939

Claims priority, application Switzerland, March 3, 1969, 3197/69

Int. Cl. C08g *23/00, 23/24*

U.S. Cl. 260—47 R **1 Claim**

Heat resistant linear aromatic copolythioethers having recurring the structural units —S—R—S—R′ in which R and R′ originate from a dithiol and a polyhalogen. Preparing these copolythioethers by intermixing an aromatic dithiol and a bifunctional aromatic polyhalogen and an aromatic dithiol or a bifunctional aromatic polyhalogen different from the above. Reacting these compounds in an alkaline medium, without oxygen and in the presence of an inert polar aprotic solvent. Then recovering the copolythioether.

3,706,703

PROCESS FOR THE PREPARATION OF CYCLIC ACID ANHYDRIDES

William J. Heilman, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 828,001, May 26, 1969, which is a continuation-in-part of abandoned application Ser. No. 594,347, Oct. 25, 1966. This application Nov. 27, 1970, Ser. No. 93,469

Int. Cl. C08f *27/12*

U.S. Cl. 260—78.5 T **10 Claims**

A process is defined for heating an organic compound containing at least one half-ester of a dicarboxylic acid where the carbonyl groups are directly connected to adjacent internal aliphatic carbon atoms to a temperature from about 80° C. to 149° C. to convert the half-ester groups to cyclic anhydride groups and a by-product alcohol. The organic compound is a 1:1 copolymer of an aliphatic hydrocarbon having at least three carbon atoms, such as 1-hexane, and maleic anhydride. If the organic compound contains both half-ester and diester groups, the resulting compound after heating to a temperature from 80° C. to 149° C. will contain anhydride and diester linkages.

3,706,704

PREPARATION OF C_6–C_{10} OLEFIN-MALEIC ANHYDRIDE COPOLYMERS

Willam J. Heilman, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 828,001, May 26, 1969, which is a continuation-in-part of application Ser. No. 594,347, Oct. 25, 1966. This application Nov. 27, 1970, Ser. No. 93,501

The portion of the term of the patent subsequent to May 25, 1988, has been disclaimed

Int. Cl. C08f *1/08, 15/02*

U.S. Cl. 260—78.5 R **14 Claims**

Copolymers of maleic anhydride and an aliphatic alpha-olefin having from six to ten carbon atoms are prepared in a finely divided filterable solid form. Maleic anhydride is copolymerized with at least one of the olefins in the presence of a free-radical catalyst and a solvent for both of the monomers and the resulting copolymer. The copolymer is precipitated by adding the reaction solution to a sufficient amount of a monohydroxy aliphatic alcohol having from one to four carbon atoms.

3,706,705

METHOD FOR SUSPENSION-POLYMERIZING VINYL CHLORIDE

Shunichi Koyanagi, Yokohama-shi, Kanagawa-ken; Hajime Kitamura, Itabashi-ku, Tokyo, and Toshihide Shimizu, Kashima-gun, Ibaragi-ken, all of Japan, assignors to Shinetsu Chemical Company

Filed Aug. 26, 1971, Ser. No. 175,325

Claims priority, application Japan, June 3, 1971, 46/38810

Int. Cl. C08f *1/11, 3/30, 15/2*

U.S. Cl. 260—78.5 CL **11 Claims**

Vinyl chloride or a mixture of vinyl monomers containing vinyl chloride as its main component, and an aqueous medium containing a protective colloidal substance and an anionic surface active agent are subjected to an initial stirring, in the presence of an oil-soluble catalyst. Before the rate degree of conversion reaches 30 percent, an inorganic polyvalent metal salt and/or an amine hydrochloride is added to the polymerization system. The anionic surface active agent is thereby rendered water-insoluble. The polymerization is then completed. A polymer having uniform particle size distribution, superior porosity and a high rate of plasticizer absorption is produced.

3,706,706

POLYETHERS CONTAINING PENDANT METAL THIOSULFATE GROUPS

Edwin J. Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 843,799, July 22, 1969. This application May 6, 1971, Ser. No. 140,948

Int. Cl. C08g *23/06, 23/20, 23/04*

U.S. Cl. 260—79.3 R **10 Claims**

Modified polyethers containing pendant metal thiosulfate groups are described. The modified polyethers are prepared by reacting a polymer of an epihalohydrin or 1,4-dihalo-2,3-epoxybutane with a metal thiosulfate.

3,706,707

ADDUCTS OF A POLYMER OF A CYCLIC ETHER AND A SULTONE

Louis E. Trapasso, Westfield, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Original application Oct. 31, 1966, Ser. No. 590,460, now Patent No. 3,502,607, dated Mar. 24, 1970. Divided and this application Sept. 18, 1969, Ser. No. 871,057

Int. Cl. C07d *89/06*

U.S. Cl. 260—79.3 R **7 Claims**

An adduct composition particularly useful for increasing the dyeability of shaped polymeric articles, particularly fibers and more particularly, acrylonitrile fibers. The composition is an adduct of a polymer of a cyclic ether and a sultone. The adduct functions as a dyesite for a cationic dye diffusion promoter when incorporated into a polymer. The method of producing such adducts is also described.

3,706,708

UNIFORMLY DISPERSIBLE INSOLUBLE SULFUR VULCANIZING COMPOSITIONS

James Edward Kearnan, Yorktown Heights, and Robert William Newsbaum, Mahopac, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Sept. 28, 1970, Ser. No. 76,282

Int. Cl. C08c *11/54;* **C08f** *27/06*

U.S. Cl. 260—79.5 **16 Claims**

The dispersibility, in rubber, of insoluble sulfur used for vulcanizing can be improved by admixing alkylphenoxypoly(ethyleneoxy)ethanols with the sulfur.

3,706,709

COATING COMPOSITIONS OF UNSATURATED CARBOXYLIC ACID AMIDE POLYMERS AND UNSATURATED ORGANOSILANES

J. A. Erikson, Gibsonia, Pa., and Robert G. Douds, Delaware, Ohio, assignors to PPG Industries, Pittsburgh, Pa.

No Drawing. Filed July 22, 1970, Ser. No. 57,337
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.71 11 Claims

Resinous compositions useful as coating compositions comprise an interpolymer of monomers consisting essentially of an unsaturated carboxylic acid amide, one or more ethylenically unsaturated monomers, and an unsaturated organoalkoxysilane. Coatings produced from these compositions have outstanding physical properties, such as chemical resistance, adhesion, flexibility, impact resistance, and hardness.

3,706,710

PROCESS FOR PREPARING DISCOLORATION-RESISTANT CURABLE POLYURETHANE COATINGS

Louis T. Camilleri, North Bellmore, and Anthony F. Forgione, Bayshore, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Dec. 31, 1970, Ser. No. 103,279
Int. Cl. C08g *53/00, 22/18*
U.S. Cl. 260—75 NE 17 Claims

Moisture curable polyurethane coatings are rendered discoloration-resistant by first reacting a polyol with an aromatic polyisocyanate and completing the reaction with an aliphatic polyisocyanate.

3,706,711

PROCESS FOR THE MANUFACTURE OF HIGHLY POLYMERIC POLYESTERS UTILIZING SAMARIUM COMPOUND CATALYSTS

André Jan Conix, Antwerp, and Lambert Gaston Jeurissen, Mortsel, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed Apr. 10, 1968, Ser. No. 720,400
Claims priority, application Great Britain, May 8, 1967, 21,291/67
Int. Cl. C08g *17/01, 17/013*
U.S. Cl. 260—75 C 4 Claims

A process for the manufacture of highly polymeric fiber and film-forming polyesters comprising polycondensing a glycol dicarboxylate in the presence of a catalytic amount of a samarium compound is described. Only a small amount of the samarium compound is required, resulting in polyesters having good color.

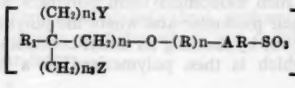
3,706,712

AROMATIC SULFONATE MODIFIED POLYESTERS

Gerald W. Davis, Charlotte, N.C., and Robert W. Stackman, Morristown, N.J., assignors to Celanese Corporation, New York, N.Y., and Fiber Industries, Inc., Charlotte, N.C.

Continuation-in-part of application Ser. No. 833,729, June 16, 1969. This application Apr. 13, 1970, Ser. No. 27,942
Int. Cl. C08g *17/08*
U.S. Cl. 260—75 S 9 Claims

Aromatic sulfonates and fiber and film forming polymers containing these sulfonates, the sulfonates being represented by the general formula:



wherein R_1 represents either hydrogen or an alkyl radical containing from 1 to about 6 carbon atoms; n, n_1, n_2 and n_3 each independently represent an integer from 0 to about 6, and $n_1+n_2+n_3$ is equal to or greater than 2 if Y and Z both are hydroxy; Y and Z are selected independently from the class consisting of hydroxy, carboxy, and alkoxycarbonyl, the alkoxy portion of which contains from 1 to about 6 carbon atoms; Ar represents a divalent aromatic radical which may be substituted or unsubstituted; m is an integer equal to the valency of the metal; and R represents a divalent radical, with the proviso that where n is 0 and Ar is phenylene, the metal is lithium.

3,706,713

ALIPHATIC POLYCARBONATES

Colin G. Hull, San Francisco, and John Boor, Jr., Cerrito, both of Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Aug. 11, 1970, Ser. No. 63,030
Int. Cl. C08g *17/13*
U.S. Cl. 260—77.5 D 3 Claims

Compositions comprising novel copolymers of carbon dioxide and one or more aliphatic 1,2 monoepoxide having at least four carbon atoms per molecule are prepared in the presence of a catalytic amount of a catalyst system comprising an organo metallic compound of magnesium, zinc or cadmium, an amine and water at pressures between 1 and 200 atmospheres and temperatures between 20° and 225° C. The compositions are useful for moldings, films and fibers.

3,706,714

POLYURETHANE POLYOLS

Rodney Frederick Lloyd and Michael Cuscurida, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Feb. 2, 1971, Ser. No. 112,044
Int. Cl. C08g *22/14*
U.S. Cl. 260—77.5 AP 5 Claims

Polyurethane polyols may be prepared to contain oxypropylene and oxyethylene linkages and also, pendant alkyl chains of 8 to 20 carbon atoms. The polyols may be used to prepare polyurethane products of unusual softness and low resistance to temporary deformation useful as caulks, sealants, gaskets, and other space filling materials.

3,706,715

CROSS-LINKABLE POLYMER COMPOSITIONS COMPRISING ETHYLENICALLY UNSATURATED POLYMER

Karl Brack, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed July 1, 1971, Ser. No. 158,981
Int. Cl. C08f *11/00*; C08g *41/04*
U.S. Cl. 260—77.5 AC 4 Claims

Cross-linkable ethylenically unsaturated polymer compositions are described, which compositions comprise an ethylenically unsaturated polymer, a precursor of a polyfunctional nitrile N-oxide or nitrile imine and a lactone or sultone. These compositions cross-link when heated. Suitable lactones are those containing 3 or 4 carbon atoms in the lactone ring such as propiolactones and butyrolactones and suitable sultones are those containing 3 carbon atoms in the sultone ring such as 1,3-propane sultone. These compositions are useful as sealants and adhesives.

3,706,716

ALPHA-METHYLENEGLUTARIMIDE POLYMERS AND COPOLYMERS AND PREPARATION THEREOF

John M. Hoyt, Cincinnati, and Karl Koch, Norwood, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Original application Dec. 28, 1967, Ser. No. 694,048. Divided and this application May 28, 1970, Ser. No. 50,008

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 UA 12 Claims

Homopolymers and copolymers of alpha-methyleneglutarimide and process for preparing same using an initiator which is an alkali metal or an organometallic compound, which polymers can be employed to make fibers, foils and films.

3,706,717

COPOLYMERS OF FUMARIC ACID AND ALLYL SULFONIC ACID

Frederick Herman Siegele, Westport, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed July 1, 1970, Ser. No. 51,686

Int. Cl. C08f *15/02*

U.S. Cl. 260—78.5 R 2 Claims

Formation of hard adherent scale deposits of insoluble salts particularly carbonates and sulfates of metals such as calcium or other alkaline earth metals, and/or iron are inhibited, controlled or prevented on, or removed from (a) the walls of evaporators, cooling towers, heat exchangers, boilers and devices where a thermal gradient exists or areas where catalytically active sites induce scale formation in aqueous systems by (b) from about 2/10 to 2000 parts per million of an aliphatic copolymer of monovinyl compound and a vinyl sulfonate having (c) from about 25 mol percent to 75 mol percent of the sulfonate and (d) a molecular weight of about 1000 to 25,000. The copolymer is useful alone, and in cooperation with corrosion inhibitors, other sequestrants and chelating agents.

3,706,718

CATALYST AND METHOD FOR MAKING EPDM HAVING IMPROVED PROCESSABILITY

Frederick C. Loveless, Oakland, and Don H. Miller, Wayne, N.J., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed May 10, 1971, Ser. No. 142,058

Int. Cl. B01j *11/00;* C08f *15/40*

U.S. Cl. 260—80.78 12 Claims

The use of polypropylene glycol in the manufacture of EPDM based on a cyclic diene (e.g., dicyclopentadiene or ethylidene norbornene) with catalyst containing (a) vanadium oxytrichloride and (b) alkylaluminum sesquihalide or dialkylaluminum halide, leads to decreased long chain branching and consequent improved processability.

3,706,719

PROCESS FOR THE POLYMERIZATION OF MONOMERS

Edward P. Goffinet, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 6, 1971, Ser. No. 187,080

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.78 4 Claims

There is provided a process for the copolymerization of ethylene in a horizontal cylindrical evaporatively cooled reactor provided with a rotatable ribbon blender agitator having a set of outer ribbon blades pitched in a direction opposite to a set of inner ribbon blades.

3,706,720

CONTINUOUS PROCESS FOR THE PRODUCTION OF ALFIN POLYMERS

Leo H. Broering, Fort Wright, Ky., and William R. Birchall, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of abandoned applications Ser. No. 294,717, July 12, 1963, Ser. No. 661,921, Aug. 21, 1967, and Ser. No. 784,298, Dec. 13, 1968. This application Jan. 16, 1970, Ser. No. 3,539

Int. Cl. C08d *1/20, 3/06;* C08f *19/08*

U.S. Cl. 260—82.1 20 Claims

A continuous process for the preparation of alfin polymers is provided, effecting the polymerization of the monomer by an alfin catalyst in the presence of a molecular weight moderator, separating unreacted monomer, volatile low polymer and solvent by subjecting the alfin polymer reaction mixture to steam stripping, and thereafter purifying the monomer and solvent and recycling them for reuse, and washing and drying the alfin rubber.

In the process of the invention, molecular weight of the polymer is controlled by adjustment of the proportion of molecular weight moderator. No other modification of reaction conditions, proportions of catalyst, and other process variables is necessary.

3,706,721

CONTROL OF MOLECULAR WEIGHT IN THE PRODUCTION OF ALFIN POLYMERS

Lowell D. Grinninger, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Filed Mar. 26, 1970, Ser. No. 23,057

Int. Cl. C08d *1/32, 3/06*

U.S. Cl. 260—82.1 17 Claims

A process is provided for the control of molecular weight in the production of alfin polymers and copolymers by effecting the polymerization of the monomers by an alfin catalyst in the presence of a specific type of triene hydrocarbon compound having a conjugated diene structure adjacent to an allyl group. The molecular weight of an alfin polymer can be controlled by adjustment of the proportion of this molecular weight control agent or moderator.

3,706,722

POLYMERS FROM ESSENTIALLY WATER-INSOLUBLE UNSATURATED LIQUID MONOMERS AND PROCESS FOR PREPARING SAME

Alfred R. Nelson, Bay City, and Vernon D. Floria, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

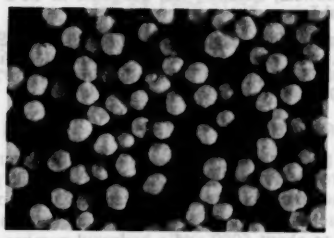
Continuation-in-part of application Ser. No. 718,722, Apr. 4, 1968, which is a continuation-in-part of application Ser. No. 642,169, May 29, 1967. This application July 2, 1970, Ser. No. 51,866

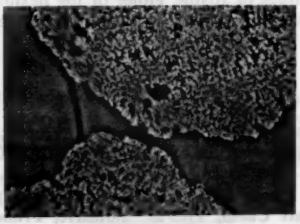
Int. Cl. C08f *1/60, 15/32, 1/09*

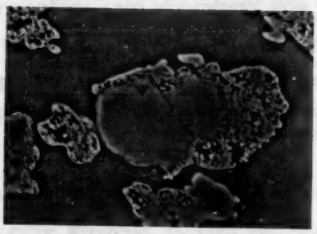
U.S. Cl. 260—85.5 ZA 9 Claims

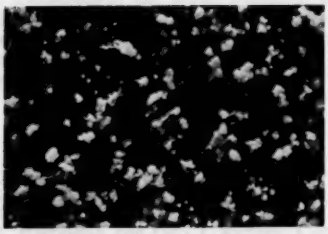
An improvement in the process for preparing polymers from substantially water-insoluble polymerizable ethylenically unsaturated liquid monomer in aqueous suspension wherein such monomers form polymers which are insoluble in their monomer and where the polymerization is first carried out by forming an initial continuous monomer phase which is then polymerized to a maximum

conversion of about 20 percent and the polymerization completed following the addition of water in amount sufficient to form a monomer-in-water phase; wherein the improvement consists of conducting the polymerization in









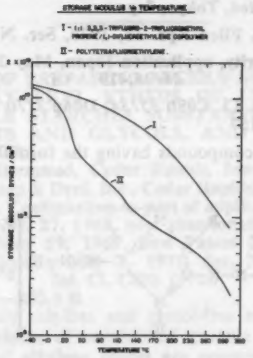
the presence of certain, non-ionic, monomer soluble surface active agents which provide for the formation of polymers composed of individual, uniform, substantially spherical porous particles which are devoid of exterior pericellular layer.

3,706,723

COPOLYMER OF 3,3,3 - TRIFLUORO-2-TRIFLUOROMETHYL PROPENE AND VINYLIDENE FLUORIDE

Swayambu Chandrasekaran, East Orange, and Max B. Mueller, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 29, 1970, Ser. No. 32,944
Int. Cl. C08f *15/06*
U.S. Cl. 260—87.7 **9 Claims**


STORAGE MODULUS VS TEMPERATURE
I - (c) 3,3,3 - TRIFLUORO - 2 - TRIFLUOROMETHYL PROPENE / 1,1 - DIFLUOROETHYLENE COPOLYMER
II - POLYTETRAFLUOROETHYLENE
I
II
TEMPERATURE °C

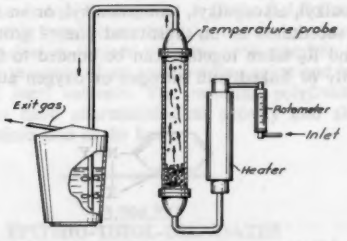
Thermoplastic 3,3,3-trifluoro-2-trifluoromethyl propene/1,1-difluoroethylene copolymers are prepared by copolymerizing the monomers in liquid media in the presence of a free radical generating initiator. The copolymer products are melt-processable, retain their mechanical strength at high temperatures, and resist attack by corrosive agents and solvents.

3,706,724

PROCESS FOR THE DEHYDROCHLORINATION OF CHLORINATED POLYOLEFINS

Robert R. Blanchard, Port Allen, and James S. Kennedy and Reginald F. Roberts, Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 2, 1971, Ser. No. 159,427
Int. Cl. C08f *27/02, 3/00*
U.S. Cl. 260—94.9 GD **9 Claims**



This invention pertains to a process for preparing dehydrochlorinated chlorinated polyolefins in particulate form by dehydrochlorinating a comminuted chlorinated polyolefin containing catalyzing amounts of a Lewis acid, while said chlorinated polyolefin is maintained in a fluidized bed

in the presence of a substantially inert gas and further in the presence of small amounts of an inert filler which has an affinity for adsorption onto the surfaces of the chlorinated polyolefin.

3,706,725

BASIC TRIAZOLE DISAZO DYES

Minoru Ozutsumi, Shigeo Maeda, and Teruo Nakajyo, Tokyo, Japan, assignors to Hodogaya Chemical Industry Co., Limited, Tokyo, Japan

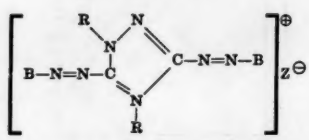
No Drawing. Filed Apr. 15, 1970, Ser. No. 28,933

Claims priority, application Japan, May 20, 1969, 44/38,419

Int. Cl. C09b *35/34*; D06p *3/70*

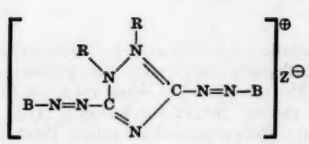
U.S. Cl. 260—157 **7 Claims**

Basic disazo compounds having the formula:



(I)

or

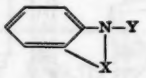


(I')

Wherein R represents a lower alkyl or a benzyl radical; $Z^{\ominus}$ represents an anion; and B represents either

(II)

wherein A is a phenylene group or a naphthylene group which may have a lower alkyl, lower alkoxy or an acylamine radical or halogen as a substituent; R_1 and R_2 each represent, respectively, hydrogen, lower alkyl, oxyalkyl, cyanoalkyl, alkoxyalkyl, halogenoalkyl, or an aralkyl radical, substituted or un-substituted phenyl group, and the R_1 and R_2 taken together can be bonded to form a ring directly or linked with nitrogen or oxygen atom; or



(III)

wherein X represents a divalent residue radical which can form hetero rings having 5 or 6 members linked with a nitrogen atom; and Y represents a lower alkyl, oxyalkyl, cyanoalkyl, alkoxyalkyl, halogenoalkyl, or an aralkyl radical which are useful for coloring a wide variety of fibers and especially polyacrylonitrile type fibers and methods for producing the same which compounds provide shades of color which are characterized by high fastness to sunlight, good wash resistance, good rub resistance, and good heat stability.

3,706,726

POLYURETHANE RESINS PREPARED FROM ALKOXYLATED GLUCOSE DERIVATIVES

John P. Gibbons, Western Springs, and Lawrence Wondolowski, Lemont, Ill., assignors to CPC International Inc.

No Drawing. Original application Nov. 15, 1967, Ser. No. 683,162, now Patent No. 3,586,650, dated June 22, 1971. Divided and this application June 1, 1970, Ser. No. 54,040

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 R **5 Claims**

Covers polyurethane resins. Particularly covers polyurethane resins formed by reacting an organic polyisocyanate and an alkoxylated monoacetone glucose or ethylene glucose having a molecular weight ranging from about 350 to about 5000 and a hydroxyl number ranging from about 40 to about 500. The resins may be in the form of coatings or foams, either of the flexible or rigid type; also covers a method of preparing the above polyurethanes.

3,706,727

STEROID COMPOUNDS EFFECTIVE AGAINST CARDIAC CONDITIONS AND METHOD OF THEIR PREPARATION

Wilhelmine Beran, Linz, Austria, assignor to Laevosan-Gesellschaft Chem. Pharm. Industrie, Franck & Dr. Freudl, Linz, Austria

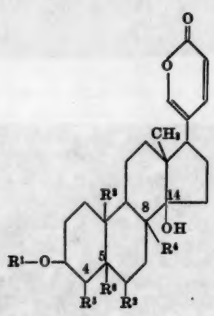
Filed June 10, 1969, Ser. No. 831,847

Claims priority, application Austria, June 10, 1968, A 5,546/68

Int. Cl. C07c *173/00*

U.S. Cl. 260—210.5 **22 Claims**

The present invention provides novel steroid compounds having the formula



wherein R_1 is hydrogen or a sugar radical; R_2 is hydrogen, a hydroxyl group or an ester or an ether thereof with a lower alkyl carboxylic acid or a lower alkyl alcohol; R_3 is a lower alkyl radical which may be substituted with an oxygen atom, a hydroxyl group, a lower alkoxy group, or with the acyl radical of a lower alkyl carboxylic acid; R_4 is hydrogen, the hydroxyl group or an ester thereof with a lower alkyl carboxylic acid, or is the ethoxy group; and R_5 and R_6 are each a hydroxyl group or together form an epoxy group.

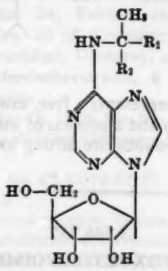
3,706,728

N(6)-BRANCHED CHAIN LOWER-ALKYL-ADENOSINE DERIVATIVES

Erich Fauland, Mannheim-Waldhof, Wolfgang Kampe, Heddesheim, Max Thiel and Wolfgang Juhran, Mannheim, Karl Dietmann, Mannheim-Waldhof, and Harald Stork, Lampertheim, Germany, assignors to Boehringer Mannheim GmbH, Postfach, Germany

No Drawing. Filed Mar. 4, 1970, Ser. No. 16,617
Claims priority, application Germany, Mar. 19, 1969, P 19 13 818.2, P 19 13 816.0
Int. Cl. C07d *51/54*
U.S. Cl. 260—211.5 R 9 Claims

Novel N(6)-alkyl-adenosine derivatives of the formula



wherein R_1 is straight-chain or branched-chain alkyl of from 1 to 6 carbon atoms; and R_2 is methyl or, when R_1 contains more than one carbon atom, R_2 can also be hydrogen; are useful as cardio- and circulatory-active agents and in influencing fat metabolism.

3,706,729

ANTIBIOTICS AND PROCESSES FOR THEIR PREPARATION

Andrew David Batcho, 98 Jackson Ave., North Plainfield, N.J. 07060; Julius Berger, 308 Aycrigg Ave., Passaic, N.J. 07055; Andre Furlenmeier, 119 Wettseinallee, Basel, Switzerland; Oscar Keller, 187 Rutherford Blvd., Clifton, N.J. 07014; Benjamin Pecherer, 24 Clairidge Court, Montclair, N.J. 07042; Arno Johannes Schocher, RD 2, Boonton Ave., Boonton, N.J. 07005; Hans Spiegelberg, 16 Im Holeeletten, Basel, Switzerland and Bruno Peter Vaterlaus, 14 Muhlesteig, Binningen, Switzerland

No Drawing. Filed Nov. 21, 1963, Ser. No. 325,498
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R 26 Claims

Novel antibiotics of the family coumermycin formerly called sugordomycins are prepared by cultivating the organism *Streptomyces hazeliensis* (NRRL 2938). The most active of the antibiotics is coumermycin A_1, which is of the Formula I.

3,706,730

METHOD OF CONTROLLING ETHERIFICATION OF GRANULE STARCH WITH AN ALKALI-CONSUMING ETHERIFYING REAGENT

Erling T. Hjermstad and Otto J. Rajtora, Cedar Rapids, Iowa, assignors to Penick & Ford Limited, Cedar Rapids, Iowa

Filed Mar. 1, 1971, Ser. No. 119,480
Int. Cl. C08b *19/06*
U.S. Cl. 260—233.3 R 15 Claims

Granule starch is etherified with an alkali-consuming etherifying reagent, such as an alkyl or aralkyl halide, using an alkali etherification catalyst while maintaining the starch in a filterable state with a reduced amount of an inorganic salt starch swelling inhibitor, such as sodium chloride or sodium sulfate. In the method, a water suspension of granule starch, with limited quantities of the alkali etherification catalyst and the salt inhibitor, is reacted in a batch-type reaction vessel with the alkali-consuming etherifying reagent. During the course of the reaction, portions of the reaction mixture are withdrawn and formed into a turbulently flowing stream outside the reaction vessel. There is injected into this stream, a water solution of additional amounts of the alkali etherification catalyst, and the withdrawn portions are returned to the reaction vessel with the alkali in admixture therewith. The additional amounts of alkali catalyst are proportioned to maintain limited and controlled concentrations thereof in the reaction vessel.

3,706,731

PROCESS OF PREPARING HIGHLY SUBSTITUTED HYDROXYALKYL ETHERS OF UNINHIBITED GRANULE STARCHES SUBSTANTIALLY FREE OF SALTS AND GLYCOLS, AND RESULTING PRODUCTS

Erling T. Hjermstad, Cedar Rapids, Iowa, assignor to Kcinep & Drof, Inc., Cedar Rapids, Iowa

No Drawing. Continuation-in-part of applications Ser. No. 779,631, Nov. 27, 1968, now abandoned, and Ser. No. 826,027, May 19, 1969, now Patent No. 3,577,407. This application May 3, 1971, Ser. No. 139,939
Int. Cl. C08b *19/06*
U.S. Cl. 260—233.3 R 22 Claims

Substantially salt-free and glycol-free monofunctional reaction products of uninhibited granule starches with high levels of alkylene oxides are prepared by a water suspension etherification process using an alkaline catalyst in combination with an alkali metal sulfate. The alkali metal sulfate is essential, and it is used at a concentration of at least 3 to 5 parts per 100 parts of water. Although the reaction is carried to a high substitution level measured as hydroxyalkyl (D.S.), the starch, although not cross-linked, remains in native granule form and is both filterable and washable. This permits substantially complete removal of the salts and side reaction products by ordinary filtration and washing techniques. The method can be employed to produce novel starch products, which are believed to contain monofunctionally-linked oxyalkyl polymer chains, and the products are free of bifunctional cross-links.

3,706,732

POLYFRUCTOSAN TRINICOTINATES

Karl Holzer, Linz (Danube), Austria, assignor to Laevosan-Gesellschaft Chem. Pharm. Industrie Frank & Dr. Freudl, Linz (Danube), Austria

No Drawing. Filed Feb. 9, 1970, Ser. No. 9,977
Int. Cl. C07c *47/18*
U.S. Cl. 260—234 R 2 Claims

Polyfructosan trinicotinates are disclosed wherein the polyfructosan is inulin, sinistrin or garlic polyfructosan. These materials may be prepared by esterifying nicotinic acid or a derivative thereof with the corresponding fructosan in the presence of an acid bonding agent and in the presence of inert solvents. The resulting polyfructosan trinicotinates have pharmacological activity and slowly release nicotinic acid in the body.

3,706,733

EPITHIO-THIOL-DIENOATES

Clive A. Henrick, 1621 Channing Ave., and John B. Siddall, 2470 Greer St., both of Palo Alto, Calif. 94304

No Drawing. Filed Feb. 16, 1971, Ser. No. 115,725
Int. Cl. C07d *59/00, 1/00*
U.S. Cl. 260—327 E 9 Claims

Polyunsaturated aliphatic hydrocarbon thiolesters, nitriles, amines, halides, alcohols and derivatives thereof, synthesis thereof, for the control of arthropods.

3,706,734

1,5-DIHYDRO-2H-1,4-BENZODIAZEPINE

Rodney Ian Fryer, North Caldwell, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Jan. 25, 1968, Ser. No. 700,348, which is a continuation-in-part of application Ser. No. 614,009, Feb. 6, 1967. Divided and this application Apr. 15, 1971, Ser. No. 133,739

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D 9 Claims

Novel benzodiazepin-2-ones having an ethylenic linkage joining positions 3 and 4. These compounds are intermediates in a process for preparing dihydro benzodiazepines from tetrahydro benzodiazepines. Dihydro benzodiazepines are useful as muscle relaxants, sedatives and anticonvulsants.

3,706,735

BASIC DERIVATIVES OF 5H-DIBENZ[b,f] AZEPINES

Alfred Sallmann, Bottmingen, and Rudolf Pfister, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Aug. 19, 1970, Ser. No. 65,350

Claims priority, application Switzerland, Aug. 20, 1969, 12,583/69

Int. Cl. C07d *41/08*

U.S. Cl. 260—239 D 3 Claims

2 - (2 - aminoethyl) - 10,11 - dihydro - 5H - dibenz [b,f]azepines optionally substituted in 5-position by methyl or ethyl and at the basic nitrogen atom of the side-chain by methyl, as well as their pharmaceutically acceptable acid addition salts, have anti-inflammatory and analgesic activity; the compounds are useful for the treatment of inflammatory diseases and for alleviating pain in mammals, and are active ingredients of pharmaceutical compositions; a typical embodiment is 2-(2-aminoethyl)-10,11-dihydro-5H-dibenz[b,f]azepine.

3,706,736

19-HYDROXY-3-AZA-A-HOMO-STEROIDS

Oskar Jeger, Zollikerberg, and Hans Ueli Wehrli, Schaffhausen, Switzerland, assignors to Ciba-Geigy Corporation, Summit, N.J.

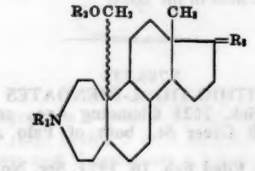
No Drawing. Filed Sept. 22, 1969, Ser. No. 860,089

Claims priority, application Switzerland, Sept. 27, 1968, 14,489/68, 14,490/68

Int. Cl. C07d *41/08, 99/04*

U.S. Cl. 260—239 BB 10 Claims

The invention relates to novel compounds of the formula

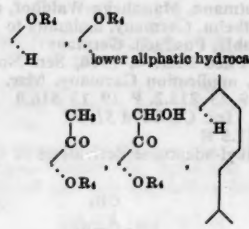


which may contain a double bond in the 4,4α, or the 5,6-position, wherein

R_1=H or lower alkyl

R_2O=a free, esterified or etherified hydroxyl group and

R_3=free or ketalized oxo group



in which OR_4 represents a free, esterified or etherified hydroxyl group and a process of manufacturing same. The new compounds are strong local anesthetics.

3,706,737

NOVEL 5β,19-(EPOXYETHANOIMINO)-STEROIDS

Hansuli Wehrli, Schaffhausen, and Oskar Jeger, Zollikerberg, Zurich, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed June 22, 1970, Ser. No. 48,472

Claims priority, application Switzerland, June 25, 1969, 9,707/69

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R 10 Claims

Compounds of the class of 5β,19-(epoxyethanoimino)-androstanes have useful blood-circulation-promoting activity and are active ingredients of pharmaceutical compositions; a typical embodiment is 1'-methyl-2',17-dioxo-5β,19-(epoxyethanoimino)-androstane.

3,706,738

5,6-DIHYDRO-8H-THIOPYRANO[4',3':4,5]THIENO [2,3-d]PYRIMIDINES

Paul Schmidt and Kurt Eichenberger, Therwil, and Ernst Schweizer, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Summit, N.J.

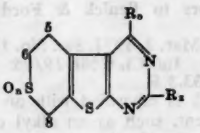
No Drawing. Continuation-in-part of application Ser. No. 802,248, Feb. 25, 1969. This application Sept. 21, 1970, Ser. No. 74,240

Claims priority, application Switzerland, Feb. 29, 1968, 2,980/68; Aug. 9, 1968, 12,029/68; Jan. 21, 1969, 837/69; Dec. 30, 1969, 19,408/69

Int. Cl. C07d *99/06*

U.S. Cl. 260—247.1 22 Claims

Compounds of the formula



in which R_o stands for an aminoalkylamino group, R_x for an optionally substituted hydrocarbon radical or hy-

drogen and *n* stands for 0, 1 or 2, and which contain in at least one of the positions 6 and 8 an aryl radical and which may be further substituted in positions 5, 6 and/or 8 are useful as chemotherapeutic and prophylactic agents against malaria.

3,706,739

3-(α-SUBSTITUTED AMINO-β-ALKOXYBENZOXY-PROPYL)-6,7-OR-6,7,8-ALKOXY-1,2,3-BENZOTRIAZINE-4(3H)-ONES

Rudi Beyerle, 15, Allensteinerstrasse, 6451 Bruchkobel; Rolf-Eberhard Nitz, 28, Steinauerstrasse; Klaus Resag, 15, Hunfelderstrasse, both of 6 Frankfurt(Main)-Fechenheim; Eckhard Schraven, 24, Fuldaer Strasse, 6 Frankfurt (Main) Fechenheim, all of Germany; Adolf Stachel, deceased, late of Frankfurt, Germany, and by Inge Stachel, executrix, 52, Meerholzerstrasse, 6 Frankfurt (Main)-Fechenheim, Germany

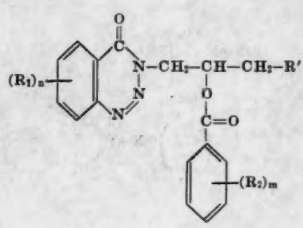
Filed May 18, 1970, Ser. No. 38,544

Claims priority, application Germany, May 22, 1969, P 19 26 075.4

Int. Cl. C07d *87/36*

U.S. Cl. 260—247.2 B **6 Claims**

The present invention pertains to new, pharmacologically valuable basically substituted 1,2,3-benzotriazine-4(3H)-one derivatives having excellent coronary dilator properties and which have the structural formula



wherein R′ is a radical selected from the group consisting of a secondary aliphatic, cycloaliphatic or araliphatic amine containing two to 10 carbon atoms; or of a 5, 6 or 7-membered heterocyclic nitrogen base, which contains in the nucleus in addition to the nitrogen atom a corresponding number of methylene groups as well as an additional member selected from the group consisting of a nitrogen, an oxygen or a sulfur atom, said radical being bound via a nitrogen atom; R_1 is an alkoxy group having one to four carbon atoms, which may be in the 6,7 or 6,7,8-position; R_2 is an alkoxy group having one to four carbon atoms; *m* is an integer selected from 1, 2 and 3; and *n* is an integer selected from 2 and 3; and to processes for producing said derivatives.

3,706,740

3,5-DIALKYL-4-HYDROXYPHENYL DERIVATIVES OF TRIAZINES

Martin Dexter, Briarcliff Manor, and Martin Knell, Ossining, N.Y., assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

No Drawing. Filed Apr. 19, 1971, Ser. No. 135,461

Int. Cl. C02d *55/50*

U.S. Cl. 260—248 CS **6 Claims**

Novel dialkyl-4-hydroxyphenyl derivatives of triazine were prepared which are stabilizers of organic material. Certain of these compounds can be prepared by direct alkylation of 2,6-dialkylphenol with cyanuric chloride or through the cyclization of the appropriate 3,5-dialkyl-4-hydroxyphenyl alkylimino ester hydrochloride. A typical embodiment of this invention is 2,4,6-tris(3′,5′-dimethyl-4′ - hydroxyphenyl) - 1,3,5 - triazine. The compounds of this invention are useful as stabilizers of organic materials which are subject to oxidative and thermal deterioration.

3,706,741

PROCESS FOR PREPARING 2,4,6-TRIS(TERT ALKYLAMINO)-s-TRIAZINES

Christos George Papaioannou, 7 Kingsbridge Road, Somerset, N.J. 08873

No Drawing. Filed Aug. 11, 1971, Ser. No. 170,955

Int. Cl. C07d *55/24*

U.S. Cl. 260—249.6 **5 Claims**

This disclosure describes a method of preparing 2,4,6-tris(tertiary alkylamino or 1-adamantylamino)-s-triazines by trimerization of tertiary alkyl or 1-adamantyl cyanamides. The products of the process are useful as anti-mycobacterial agents.

3,706,742

TETRAHYDROQUINOXALINE/ALDEHYDE REACTION PRODUCTS AS ANTIOXONANTS

Farris H. Wilson, Jr., Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Original application Mar. 29, 1968, Ser. No. 717,463, now Patent No. 3,580,884. Divided and this application Aug. 17, 1970, Ser. No. 64,640

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 R **5 Claims**

Polymers protected against ozone degradation by the incorporation of a reaction product produced by reacting a tetrahydroquinoxaline (1,2,3,4-tetrahydroquinoxaline) with an aldehyde (formaldehyde).

3,706,743

1,2-PYRIDAZINEDICARBOXIMIDOPHOSPHOROUS INSECTICIDES

Malcolm W. Moon, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 16, 1970, Ser. No. 81,524

Int. Cl. C07d *51/04*

U.S. Cl. 260—250 A **19 Claims**

This invention pertains to new organic chemical compounds, the process for preparing the same, and a new method and compositions for controlling invertebrate pests. The invention is more particularly directed to new pesticidally active 1,2-pyridazinedicarboximides characterized by an organic phosphorus group attached to the imide nitrogen, new N-hydroxyalkyl-1,2-pyridazinedicarboximide intermediates, new N-haloalkyl-1,2-pyridazinedicarboximide intermediates, new 4- and/or 5-alkylsubstituted-1,2-pyridazinedicaboximide intermediates, a process for preparing the foregoing new compound, a new method and compositions for controlling invertebrate pests, and a new process for cyclizing dicarboxamides to obtain corresponding dicarboximides, particularly 1,2-pyridazinedicarboximides.

3,706,744

HYDRAZONE DERIVATIVES OF 3-SUBSTITUTED AMINO-6-HYDRAZINO PYRIDAZINES

Paul L. Anderson, Dover, and William J. Houlihan and Robert E. Manning, Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,002

Int. Cl. C07d *51/04*

U.S. Cl. 260—250 A **6 Claims**

Hydrazone derivatives of 3-substituted amino-6-hydrazino pyridazines, e.g., 3 - diallylamino - 6-[2-(hept-4-ylidene)hydrazino]-pyridazine are prepared from 3-substituted amino-6-hydrazino pyridazines and carbonyl compounds and exhibit anti-hypertensive activity.

3,706,745

CERTAIN NITROFURYL(HYDRAZINO) PYRIMIDINES

Herbert Berger, Mannheim-Kafertal, Rudi Gall, Grossachsen, Hartmut Merdes, Heidelberg, Kurt Stach, Mannheim-Waldhof, and Winfriede Sauer and Wolfgang Vomel, Mannheim, Germany, assignors to Boehringer Mannheim G.m.b.H., Postfach, Germany

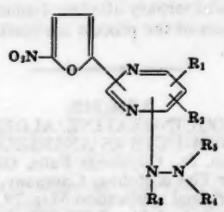
No Drawing. Filed Feb. 10, 1970, Ser. No. 10,297

Claims priority, application Germany, Feb. 25, 1969, P 19 09 346.0

Int. Cl. C07d 51/42

U.S. Cl. 260—256.4 N 7 Claims

Novel hydrazino-pyrimidines of the formula



wherein R_1 is hydrogen or lower alkyl or azido; R_2 is hydrogen or lower alkyl; and R_3, R_4 and R_5, which may be the same or different, are hydrogen or lower alkyl, lower acyl, lower carbalkoxy, lower alkyl-sulfonyl, carbamyl, thiocarbamyl or guanyl; and the physiologically compatible salts thereof, especially those wherein the hydrazine function is in the 4-position, R_2 is in the 5-position, and the nitrofuryl ring is in the 2-position of the pyrimidine ring, are outstandingly active in vivo in the treatment of urinary tract infections.

3,706,746

O-DESACETYL DERIVATIVES OF 7-N-ACYL-AMINO-CEPHALOSPHORANIC ACIDS

Rolf Bosshardt, Arlesheim, Bruno Fechtig, Reinach, Johannes Mueller, Arlesheim, Heinrich Peter, Riehen, and Hans Bickel, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Summit, N.J.

No Drawing. Filed Oct. 20, 1969, Ser. No. 867,863

Claims priority, application Switzerland, Nov. 7, 1968, 16,591/68; Apr. 26, 1969, 6,362/69

Int. Cl. C07d 99/24

U.S. Cl. 260—243 C 6 Claims

7-N-ocyl - O - desacetyl - O - N - substituted-carbamoyl-aminocephalosporanic acids in which acyl is the radical of a cyclically substituted lower alkanecarboxylic acid carrying a free amino group linked with a carbon atom of aliphatic character. Use: antibiotics.

3,706,747

BENZOTHIENO[3,2-d]- AND BENZOFURO[3,2-d] PYRIMIDINES

Gerald George De Angelis, North Stonington, and Hans-Jurgen Ernst Hess, Old Lyme, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Filed June 5, 1970, Ser. No. 43,974

Int. Cl. C07d 99/06

U.S. Cl. 260—265.5 R 8 Claims

4-aminobenzothieno[3,2-d]- and 4-aminobenzofuro[3,2-d]pyrimidines and salts thereof, novel classes of heterocyclic compounds useful as inhibitors of platelet aggregation.

3,706,748

SUBSTITUTED URACIL PHOSPHATES AS PESTICIDES

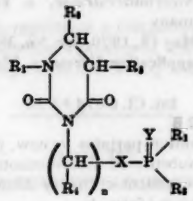
Daniel D. Rosenfeld, 8 Thrush Drive, East Brunswick, N.J. 08816, and Stanley Rosenhouse, 802 E. Front St., Plainfield, N.J. 07062

No Drawing. Continuation-in-part of application Ser. No. 803, Jan. 5, 1970. This application Oct. 4, 1971, Ser. No. 186,498

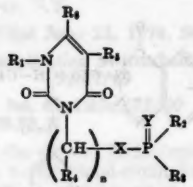
Int. Cl. C07d 51/30

U.S. Cl. 260—260 24 Claims

Uracil derivatives substituted on the imide nitrogen with a methylene thiophosphate grouping are biologically active compounds of exceptional pesticidal activity. These compounds can be characterized by the following structural formulas:



and



In this formula, R_1 is hydrogen or an organic radical; each of R_2 and R_3 is C_1–C_8 alkyl, C_1–C_8 alkoxy, C_6–C_{10} aryloxy, C_1–C_8 haloalkyl, C_6–C_{10} aryl, C_6–C_{10} halo-substituted arylalkyl and C_7–C_{11} halo-substituted arylalkyl; R_4 can be hydrogen, C_1–C_4 alkyl and halo-substituted derivatives thereof, C_2–C_8 alkenyl and alkynyl; each of R_5 and R_6 is hydrogen, C_1–C_{16} alkyl, aryl, halo-substituted alkyl and aryl, alkoxy, C_1–C_8 alkenyl and alkynyl, alkyl sulfoxide, nitrile, alkyl amino, aryloxy, carboalkoxy, dialkylamino, nitro, alkoxyalkyl, alkylthioalkyl, halogen, alkylthio and sulfonyl; n is an integer of from 1 to 2; and each of X and Y is oxygen or sulfur.

3,706,749

N-ACYL CARBOSTYRILS

Janis Plostnieks, Philadelphia, Pa., assignor to McNeil Laboratories, Inc.

No Drawing. Original application Mar. 30, 1967, Ser. No. 626,982, now Patent No. 3,575,984. Divided and this application Mar. 27, 1970, Ser. No. 24,470

Int. Cl. C07d 33/46

U.S. Cl. 260—287 R 8 Claims

The compounds herein are 3,4-dihydro-4-methyl-4-phenyl-6-chloro-carbostyril derivatives, useful for their various pharmacological activities, such as anti-inflammatory, hypotensive and central nervous system depressant activities. Also included herein is 4'-chloro-β-methyl-cinnamanilide, useful in the synthesis of the subject carbostyrils.

3,706,750

PYRRYLAMINOKETONE DERIVATIVES

Uberto Teotino and Davide Della Bella, Milan, Italy, assignors to Whitefin Holding SA, Lugano, Switzerland

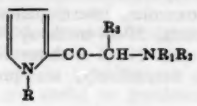
No Drawing. Continuation-in-part of application Ser. No. 636,643, May 8, 1967. This application Oct. 5, 1970, Ser. No. 78,262

Claims priority, application Great Britain, May 17, 1966, 21,777/66

Int. Cl. C07d *99/02, 99/04*

U.S. Cl. 260—293.71 6 Claims

This invention relates to pyrrylaminoketone derivatives of the formula:



(I)

wherein R is a member selected from the group consisting of methyl, ethyl, phenyl or benzyl whose benzene moiety may be further substituted with one or two substitutents selected from the group consisting of halogen, methyl, and methoxy; R_3 is hydrogen or methyl; R_1 is selected from the group consisting of hydrogen and alkyl having from 1 to 4 C atoms; R_2 is selected from the group consisting of hydrogen, alkyl having from 1 to 4 C atoms and benzyl or taken together with R_1 and the nitrogen atom to which they are attached, is a heterocyclic ring selected from the group consisting of piperidine, morpholine and its pharmaceutically suitable addition salts with organic and inorganic acids and alkyl halides, which compounds are highly valuable for their activity on the central nervous system.

3,706,751

CERTAIN POLYHALO-4-NITRO-PICOLINONITRILES

Penelope B. Domenico, Danville, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application July 3, 1969, Ser. No. 839,066, now Patent No. 3,629,281, dated Dec. 21, 1971. Divided and this application Mar. 18, 1971, Ser. No. 125,874

Int. Cl. C07d *31/46*

U.S. Cl. 260—294.9 2 Claims

Disclosed as novel compounds are polyhalo-4-nitropyridine derivatives which are substituted in the 6-position by cyano, trifluoromethyl or methylsulfonyl groups. The compounds have utility as pesticides and are variously effective as herbicides and as active constituents fungicidal and bacteriocidal compositions.

3,706,752

MANUFACTURE OF BYPYRIDYLIUM SALTS BY OXIDATION OF THE CORRESPONDING DIHYDROBIPYRIDYL

John Francis Cairns, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 21, 1969, Ser. No. 809,402

Claims priority, application Great Britain, Apr. 2, 1968, 15,785/68

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 D 1 Claim

1,1-disubstituted-bipyridylium salts are prepared by oxidizing the corresponding dihydrobipyridyl with oxygen or oxidizing agent which is an electron acceptor and which has a redox potential in water more positive than −0.50 volt as compared with the saturated calomel electrode.

3,706,753

PROCESS FOR THE PREPARATION OF 2-AMINO-3-PYRIDINOL

John Valdemar Brammer Petersen and Niels Clauson-Kaas, Farum, Denmark, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Application June 25, 1968, Ser. No. 751,650, now Patent No. 3,553,224, dated Jan. 5, 1971, which is a division of application Ser. No. 544,685, Apr. 25, 1966, now Patent No. 3,419,570, dated Dec. 31, 1968. Divided and this application Aug. 19, 1970, Ser. No. 65,336

Claims priority, application Switzerland, Apr. 29, 1965, 5,938/65, 5,939/65, 5,940/65

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 R 2 Claims

2-amino-3-pyridinol is prepared from the monohydrate of 3-hydroxy-2-imino-1-(2H)-pyridine sulfonic acid.

3,706,754

METHOD FOR PREPARING 2,3-PYRIDINEDIOL

John Valdemar Brammer Petersen and Niels Clauson-Kaas, Farum, Denmark, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Division of application Ser. No. 751,650, June 25, 1968, now Patent No. 3,553,224, which is a division of application Ser. No. 544,685, Apr. 25, 1966, now Patent No. 3,419,570. Divided and this application Aug. 19, 1970, Ser. No. 65,334

Claims priority, application Switzerland, Apr. 29, 1965, 5,938/65, 5,939/65, 5,940/65

Int. Cl. C07d *31/30*

U.S. Cl. 260—297 R 3 Claims

2,3-pyridinediol is prepared by hydrolyzing the reaction mixture of furfural, a chlorinating agent and sulfamic acid.

3,706,755

CERTAIN 4{3-[4-(PHENYL)-3,6-DIHYDRO-1(2H) PYRIDYL]-2 - HYDROXY-PROPOXY}-BENZOPHENONES

Albrecht Edenhofer, Riehen, Henri Ramuz, Birsfelden, and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of application Ser. No. 567,354, July 25, 1966. This application May 21, 1970, Ser. No. 39,505

Claims priority, application Switzerland, July 30, 1965, 10,769/65

Int. Cl. C07d *31/28*

U.S. Cl. 260—297 R 9 Claims

Novel lower alkyloxy benzophenone derivatives and processes for their preparation are disclosed. These novel benzophenone derivatives are useful as psychosedative agents.

3,706,756

AMINOALKYL-SPIROCYCLOALKANES

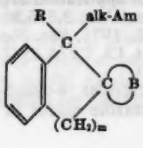
Lincoln Harvey Werner, Summit, N.J., assignor to Ciba-Geigy Corporation, Summit, N.J.

No Drawing. Continuation-in-part of application Ser. No. 723,585, Apr. 23, 1968. This application Feb. 3, 1969, Ser. No. 796,166

Int. Cl. C07c *87/28;* C07d *27/56, 31/44*

U.S. Cl. 260—295.5 6 Claims

1 - aminoalkyl - benzcycloalkane-2-spirocycloaliphatic compounds, e.g. those of the formula



alk=lower alkylene
Am=an amino group
R=H or OH; m=1–3
B=lower alkylene or alkenylene acyl and 1-dehydro derivatives, N-oxides, quaternaries and salts thereof exhibit analgetic effects.

3,706,757
CERTAIN ORGANOTIN DERIVATIVES OF 3-HYDROXYISOTHIAZOLE

Sheldon N. Lewis, Willow Grove, and George Allen Miller, Glenside, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 647,586, June 21, 1967. This application July 22, 1970, Ser. No. 57,367
Int. Cl. C07d *91/10, 91/12*
U.S. Cl. 260—299 **2 Claims**

Disclosed herein is a novel group of compounds which are properly designated as 3-isothiazole derivatives being obtained, for the most part, by reacting a substituted 3-hydroxyisothiazole with an active halogen compound. These compounds and compositions thereof exhibit biocidal characteristics and are exceptionally effective in the control of living organisms.

3,706,758
2-(1-ADAMANTANYL)-1,2-BENZISOTHIAZOLIN-3-ONE

John C. Grivas, South Holland, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed June 18, 1971, Ser. No. 154,678
Int. Cl. C07d *91/10*
U.S. Cl. 260—304 **1 Claim**

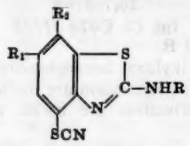
A novel compound, 2-(1-adamantanyl)-1,2-benzisothiazolin-3-one, is found to be useful as a microbiocide.

3,706,759
ANTHELMINTIC THIOCYANATOBENZOTHIAZOLES

Robert J. Alaimo and Stanford S. Pelosi, Jr., Norwich, N.Y., assignors to Morton-Norwich Products, Inc.

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,952
Int. Cl. C07d *91/46*
U.S. Cl. 260—305 **3 Claims**

Certain thiocyanatobenzothiazoles of the formula:



wherein R is hydrogen or acetyl; R_1 is ethyl, fluoro or chloro; and R_2 is hydrogen, methyl or chloro are effective anthelmintic agents.

3,706,760
4-CYANO-3β-ETHOXY-3-SECOYOHIMBANO [17,18-c]ISOXAZOLE

Jay Donald Albright and Leon Goldman, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Sept. 9, 1968, Ser. No. 758,593, now Patent No. 3,576,004. Divided and this application Jan. 11, 1971, Ser. No. 105,640
Int. Cl. C07d *85/22*
U.S. Cl. 260—307 D **1 Claim**

The disclosure describes 4-cyano-3β-ethoxy-3-secoyohimbano[17,18-c]isoxazole useful as an analgesic agent.

3,706,761
5-AMINO-4-METHOXYISOXAZOLES AND 3-AMINO-4-METHOXYISOXAZOLES

Harry Allen Albrecht, Towaco, and John Thomas Plati, Rutherford, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application Nov. 13, 1967, Ser. No. 682,551, now Patent No. 3,547,973, dated Dec. 15, 1970, which is a division of application Ser. No. 446,068, Apr. 6, 1965, now Patent No. 3,400,122, dated Sept. 3, 1968. Divided and this application Aug. 6, 1970, Ser. No. 61,785
Int. Cl. C07d *85/22*
U.S. Cl. 260—307 H **4 Claims**

5-amino-4-methoxy-3-alkylisoxazoles and 3-amino-4-methoxy-5-alkylisoxazoles, intermediates for the preparation of antibacterial N¹-(4-methoxy-3-alkyl-5-isoxazolyl)sulfanilamides and N¹-(4-methoxy-5-alkyl-3-isoxazolyl)sulfanilamides, respectively, are prepared and described.

3,706,762
FUNGICIDAL METHOD

Hiroshi Takeda, Tokyo, Japan; Walter H. Schuller; Ray V. Lawrence, both of Lake City, Fla., and Seymour S. Block, Gainesville, Fla., assignors to The United States of America as represented by the Secretary of Agriculture

Division of Ser. No. 843,225, July 18, 1969, Pat. No. 3,663,593. This application May 7, 1971, Ser. No. 141,422
Int. Cl. A01n *9/24*
U.S. Cl. 424—308 **5 Claims**

This invention relates to the formation of a new composition of matter, active as a fungicide. This product is prepared by heating either methyl levopimarate or a salt of levopimaric acid in the presence of a proton acceptor such as potassium hydroxide, sodium hydroxide, tris-n-butylamine, etc., and the resulting mixture ozonized and the ozonide oxidized with chlorine.

3,706,763
POLYALKYLENE GLYCOL MERCAPTOSUCCINIMIDES DISPERSANTS FOR LUBRICANT FLUIDS

Ting-I Wang, Fullerton, Calif., assignor to Atlantic Richfield Company, Philadelphia, Pa.

No Drawing. Original application Oct. 8, 1968, Ser. No. 765,994, now Patent No. 3,598,735. Divided and this application Sept. 2, 1970, Ser. No. 69,094
Int. Cl. C07d *27/10*
U.S. Cl. 260—326.5 S **7 Claims**

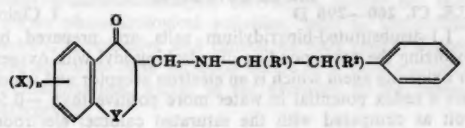
A new class of compounds and a series of novel lubricant compositions are disclosed. Polyalkylene glycol mercaptosuccinimides which are useful as dispersants in polyalkylene glycol lubricant fluids as sludge dispersants and lubricant fluid compositions including such mercaptosuccinimides are described.

3,706,764
PHENETHYLAMINOMETHYL-CHROMANONES AND- THIOCHROMANONES

Michio Nakanishi, Oita, and Tomohiko Munakata and Shinro Setoguchi, Fukuoka, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

No Drawing. Filed Apr. 13, 1970, Ser. No. 27,997
Claims priority, application Japan, Apr. 16, 1969, 44/29,899
Int. Cl. A61k *27/00*; C07d *7/20, 65/08*
U.S. Cl. 260—327 TH **6 Claims**

Phenethylamine derivatives of the formula



wherein Y is —CH_2—, —O—, —S— or —SO_2—, X is Cl, CH_3O or CH_3, *n* is 0, 1 or 2, R^1 is H, CH_3 or CH_2OH, and R^2 is H or OH and pharmaceutically acceptable, acid-addition salts thereof, are useful as antidepressants.

3,706,765

HYDROXYETHANO-ANTHRACENES

Max Wilhelm, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Dec. 16, 1969, Ser. No. 885,646
Claims priority, application Switzerland, Jan. 3, 1969, 13/69; Dec. 2, 1969, 17,952/69
Int. Cl. C07c *87/28; C07d 27/56, 5/12*
U.S. Cl. 260—326.14 T 9 Claims

9,10-dihydro-9,10-ethano-anthracenes which in at least one of the positions 1 to 8 contain a free or acylated hydroxyl group and in 9-position an aminoalkyl radical and their salts are useful as psychotropic agents.

3,706,766

1-CARBAMOYL-2-PHENYLIMINOPYRROLIDINES

Fred M. Hershenson, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Mar. 22, 1971, Ser. No. 126,948
Int. Cl. C07d *27/04*
U.S. Cl. 260—326.3 6 Claims

2-phenyliminopyrrolidines having an alkyl- or aryl-carbamoyl substituent at the 1-position are described herein. The compounds involved are useful as anti-hypertensive agents. They are prepared by the reaction of a 2-phenyliminopyrrolidine with an appropriate isocyanate.

3,706,767

ACETIC ACID COMPOUNDS AND METHODS FOR THEIR PRODUCTION

James S. Kaltenbronn, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed June 23, 1971, Ser. No. 156,118
Int. Cl. C07d *63/22*
U.S. Cl. 260—330.5 6 Claims

3 - (2 - thienyl)benzo[b]thiophene - 7 - acetic acids, 4 - (2 - thienyl)benzo[b]thiophene - 7 - acetic acids, and 7 - (2 - thienyl)benzo[b]thiophene - 4 - acetic acids, optionally substituted at the 5-position of the 2-thienyl group by bromine or chlorine and at the α-carbon position by methyl; carboxylate salts thereof; and their production by hydrolysis of a carboxylic acid precursor, reductive dehalogenation, or halogenation. The compounds of the invention are useful as anti-inflammatory agents.

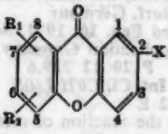
3,706,768

XANTHONE DERIVATIVES

David Edmund Bays, London, England, assignor to Allen & Hanburys Limited, London, England

No Drawing. Filed Nov. 17, 1970, Ser. No. 90,444
Claims priority, application Great Britain, Nov. 27, 1969, 58,121/69
Int. Cl. C07d *7/44*
U.S. Cl. 260—335 31 Claims

Xanthone derivatives of the formula:



in which X represents a carboxyl or 5-[1H]-tetrazolyl group; and R_1 and R_2 which may be the same or different each represent a hydrogen atom, an alkyl group containing from 1 to 4 carbon atoms, a nitro group, a halogen atom or a group of the formula —NR_3R_4 or OR_5 or $NR_5SO_2R_6$ (in which the groups R_3 and R_4 which may be the same or different each represent a hydrogen atom, a phenyl group, a benzyl group or an alkyl group which may optionally be substituted by an alkoxy group containing from 1 to 6 carbon atoms, a phenoxy group, phenyl group, an amino, alkylamino or dialkylamino group or by one or more hydroxy groups; and in which R_5 is a hydrogen atom or an alkyl group containing from 1 to 6 carbon atoms and R_6 is an alkyl group containing from 1 to 6 carbon atoms); with the proviso that when X represents a carboxyl group R_1 and R_2 do not both represent hydrogen atoms; and pharmaceutically acceptable non-toxic salts and esters of such compounds.

These derivatives have pharmacological activity and in particular inhibit the release of spasmogen mediators from antigen-antibody reactions.

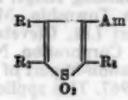
3,706,769

THIOPHENE-1,1-DIOXIDES

Melvin Harris Rosen, Florham Park, and Herbert Morton Blatter, Summit, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 765,974, Oct. 8, 1968. This application June 8, 1970, Ser. No. 44,553
Int. Cl. A61k *27/00*; C07d *63/12*
U.S. Cl. 260—332.1 5 Claims

3-amino-2,4-diaryl-thiophene-1,1-dioxides, e.g. those of the formula



Am=tert. amino
R_1=H or alkyl

are antiparasitic agents.

3,706,770

PRODUCTION OF FURANS BY REACTION OF AN OXAZOLE WITH AN ACETYLENE COMPOUND

Fritz Graf and Horst Koenig, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed June 29, 1970, Ser. No. 51,004
Claims priority, application Germany, July 10, 1969, P 19 35 009.5
Int. Cl. C07d *5/16*
U.S. Cl. 260—346.1 R 4 Claims

The production of furans by reaction of an oxazole with an acetylene compound. The new and known compounds obtainable by the process of the invention are solvents and starting materials for the production of dyes, plastics and plant protection agents.

3,706,771

ALKENYL SULFOSUCCINIC ANHYDRIDES, ACIDS AND SALTS THEREOF

Frank J. Kremers, Dover, N.J., and Michael S. Rhodes, Bronx, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 22, 1969, Ser. No. 843,753
Int. Cl. C07c *57/02*
U.S. Cl. 260—346.8 8 Claims

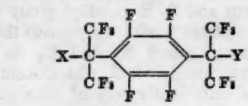
Alkenyl sulfosuccinic anhydrides, acids and alkali and amine salts thereof and their preparation by reacting an alkenyl succinic anhydride with sulfur trioxide in an anhydrous solvent reaction medium to form the alkenyl sulfosuccinic anhydride which is converted to the acid or salts by reaction with water or aqueous base solutions. The compounds are useful as surface tension reducing agents, especially adapted for incorporation in acid plating baths.

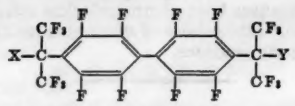
3,706,772
FLUORODIGLYCIDYL ETHERS

Scott A. Reines, Fort Lee, N.J., assignor to the United States of America as represented by the Secretary of the Navy

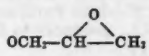
No Drawing. Filed Mar. 23, 1971, Ser. No. 127,379
Int. Cl. C07d 1/18
U.S. Cl. 260—348 R 3 Claims

Compounds of the formulae





wherein X and Y are OH or



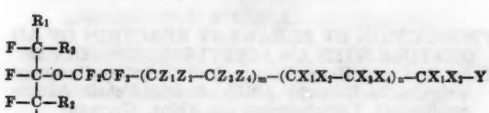
useful for producing polymers with film forming properties.

3,706,773
FLUOROCARBON COMPOUNDS

Louis Gene Anello, Basking Ridge, and Richard Francis Sweeney, Randolph Township, Morris County, N.J., and Morton Herbert Litt, Cleveland, Ohio, assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 633,359, Apr. 25, 1967. This application Apr. 12, 1968, Ser. No. 721,117
The portion of the term of the patent subsequent to Oct. 10, 1989, has been disclaimed
Int. Cl. C07c 59/22
U.S. Cl. 260—408 52 Claims

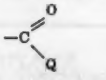
Fluorocarbon compounds of the formula



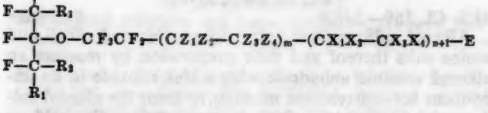
wherein R_1 and R_2 are F, fluoroalkyl or fluoroalkylene groups forming a cycloaliphatic structure, wherein

$$-(CZ_1Z_2-CZ_3Z_4)-$$

and $-(CX_1X_2-CX_3X_4)-$ are bifunctional groups wherein Z–Z_4 and X_1–X_4 are H, F, or Cl, and wherein Y is —CN or



wherein Q represents F, Cl, hydroxy, alkoxy, amino or substituted amino groups are prepared from polyfluoro halides of the formula



wherein E is a halogen.

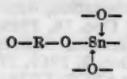
The fluorocarbon compounds of the present invention are or can be converted into surface active and stain repellent agents.

3,706,774
STANNOUS GLYCOLOXIDES

Melvin Hyman Gitlitz, Edison, N.J., assignor to M & T Chemicals Inc., Greenwich, Conn.

No Drawing. Filed Feb. 2, 1971, Ser. No. 112,045
Int. Cl. C07f 7/22
U.S. Cl. 260—429.7 8 Claims

This invention concerns novel polymeric stannous glycoloxides wherein the repeating unit exhibits the formula



and a method for preparing these compounds.

3,706,775
METHOD OF PREPARING HIGH MOLECULAR WEIGHT LINEAR ORGANOPOLYSILOXANES

Siegfried Nitzsche, Jurgen Burkhardt, and Karl-Heinrich Wegehaupt, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Filed Dec. 17, 1970, Ser. No. 99,230
Int. Cl. C07f 7/02
U.S. Cl. 260—448.2 E 13 Claims

High molecular weight copolymeric diorganopolysiloxanes consisting essentially of diphenylsiloxane and dimethylsiloxane units are prepared by alkaline hydrolysis and condensation of a mixture of 4 to 70 mol percent $(C_6H_5)_2SiCl_2$, 29 to 96 mol percent $(CH_3)_2SiCl_2$ and up to 1 mol percent of other chlorosilanes, employing a solution of 3 to 30 percent by weight of alkali metal hydroxide in water as the hydrolysis medium, separating the hydrolysates from the aqueous medium, and thereafter further condensing and equilibrizing the hydrolysates employing phosphorous-nitrogen compounds as catalysts.

3,706,776
PROCESS FOR THE MANUFACTURE OF VINYL TRICHLOROSILANE

Claus-Dietrich Seiler, Rheinfelden, Hans-Joachim Vahlensieck, Wehr, and Kurt Boje, Rheinfelden, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed Jan. 6, 1971, Ser. No. 104,523
Claims priority, application Germany, Jan. 20, 1970, P 20 02 258.6
Int. Cl. C07f 7/14
U.S. Cl. 260—448.2 E 4 Claims

Improved process for producing vinyl trichlorosilane by reacting vinyl chloride and trichlorosilane under substantially anhydrous conditions at about 680 to 850° C. using a residence time of about 0.2 to 1.8 seconds.

3,706,777
PROCESS FOR THE PRODUCTION OF ALKYL SILANES

Claus-Dietrich Seiler, Schulster, and Hans-Joachim Vahlensieck, Hagiken, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

No Drawing. Filed Feb. 10, 1971, Ser. No. 114,393
Claims priority, application Germany, Mar. 14, 1970, P 20 12 229.6
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 E 7 Claims

Improvements in the reaction of olefinic hydrocarbons with hydrogen silanes in the presence of an in contact with platinum or palladium catalyst where the catalyst is disposed above the reaction mixture below a cooling system and where condensate from the cooling system is sprinkled onto the catalyst.

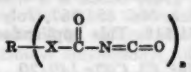
3,706,778

ISOCYANATES AND PREPARATION THEREOF

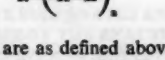
Hermann Hagemann, Cologne-Flittard, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 17, 1969, Ser. No. 842,726
Claims priority, application Germany, July 31, 1968, P 17 93 088.0
Int. Cl. C07c *119/04, 153/07*
U.S. Cl. 260—455 R 2 Claims

Organic isocyanates are prepared by a process wherein N-chlorocarbonyl isocyanate is reacted with a compound containing hydroxyl or thiol groups. A preferred embodiment of the invention comprises producing organic isocyanates having the general formula



wherein R represents an n-valent radical which may be saturated or unsaturated and which may be substituted, X is oxygen or sulfur and *n* is a positive integer, produced by reacting N-chlorocarbonyl isocyanate with compounds of the general formula



wherein R, X and *n* are as defined above, preferably at a temperature of from about —100° C. to about 200° C. The isocyanates are useful in the production of synthetic resins according to known procedures.

3,706,779

PROCESS FOR PREPARING 4-CYANOCYCLOHEXANE CARBOXYLIC ACID

Saburo Nabeta, Chibuashi, and Yuzo Yamada and Itsuya Ito, Tokyo, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,265
Claims priority, application Japan, Sept. 12, 1969, 44/72,374
Int. Cl. C07c *121/10, 121/46*
U.S. Cl. 260—464 2 Claims

A process for preparing 4-cyanocyclohexane carboxylic acid which comprises contacting hexahydroterephthalic acid or a mixture of hexahydroterephthalic acid and 1,4-dicyanocyclohexane with ammonia gas, wherein the reaction temperature is from 270° C. to 340° C.

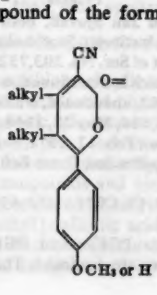
3,706,780

PHENYLDIALKYLBICYCLO-[2.2.2]-OCT-2-ENE NITRILES

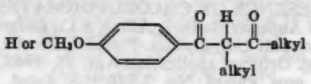
Kyu Tai Lee, Kingsridge, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Jan. 29, 1969, Ser. No. 795,059. Divided and this application Mar. 8, 1971, Ser. No. 122,237
Int. Cl. C07c *121/64*
U.S. Cl. 260—465 F 6 Claims

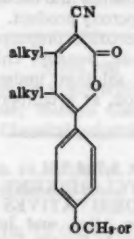
Preparing a compound of the formula:



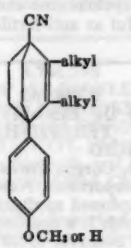
by admixing a diketone compound of the formula:



and ethyl cyanoacetate in the presence of a catalytic amount of ammonium acetate and glacial acetic acid; and thereafter via an ethylene addition reaction with a compound of the formula:



producing a compound of the formula:



3,706,781

1,2-DIHYDROPHENANTHRENES

Michael Marx, Sunnyvale, and John H. Fried, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama

No Drawing. Filed Dec. 9, 1969, Ser. No. 883,643
Int. Cl. C07c *69/76*
U.S. Cl. 260—468.5 6 Claims

New compounds of the 1,2-dihydrophenanthrene class, useful as estrogenic and anti-fertility agents, and methods for their preparation 1α-ethyl-2α-carboxy-2β-methyl-7-methoxy-1,2-dihydrophenanthrene is exemplified as illustrative of the class.

3,706,782

ESTERS OF p-BIPHENYLYLACETIC ACID WITH POLYHYDRIC ALCOHOLS

Oliver Stephenson, Anthony Musgrave Wild, and David Frank Hayman, London, England, assignors to BDH Pharmaceuticals Limited, London, England

No Drawing. Filed July 8, 1970, Ser. No. 53,330
Claims priority, application Great Britain, July 9, 1969, 34,534/69
Int. Cl. C07c *69/76*
U.S. Cl. 260—469 5 Claims

Esters of p-biphenylylacetic acid with polyhydric alcohols, for example, glyceryl-α-(p-biphenylyl) acetate, having utility as anti-inflammatory agents.

3,706,783

AUTO-OXIDATION OF ALDEHYDES IN THE PRESENCE OF CHLOROFORMATES

Richard Anthony Bafford, Aiken, S.C., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Original application Apr. 18, 1968, Ser. No. 722,166, now Patent No. 3,580,955, dated May 25, 1971. Divided and this application Mar. 18, 1971, Ser. No. 125,894

Int. Cl. C07c *73/00*; C08f *1/60*

U.S. Cl. 260—463 5 Claims

Peroxy compounds are prepared by reacting free-oxygen, an aldehyde, an organic compound containing active halogen and an acid acceptor, under anhydrous conditions, at a temperature below the decomposition temperature of the desired acylperoxy product.

Benzoyl n-butyryl peroxide prepared by reacting free-oxygen, n-butyraldehyde, benzoyl chloride and sodium carbonate, in benzene solution, under anhydrous conditions, under illumination, at a temperature of 30–35° C.

3,706,784

SUBSTITUTED CYCLOHEXENE CARBOXYLIC ACIDS AND DERIVATIVES THEREOF

John A. Edwards, Los Altos, and John H. Fried, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama

No Drawing. Filed Jan. 11, 1968, Ser. No. 697,027

Int. Cl. C07c *69/76*

U.S. Cl. 260—473 R 15 Claims

Novel substituted cyclohexene carboxylic acids and derivatives thereof useful as anti-fertility agents.

3,706,785

PREPARATION OF BIS(2-HYDROXYALKYL) ESTERS OF TEREPHTHALIC OR ISOPHTHALIC ACID

Donald R. Larkin, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Continuation of abandoned application Ser. No. 728,541, May 13, 1968, which is a continuation-in-part of abandoned application Ser. No. 695,075, Jan. 2, 1968. This application Apr. 13, 1971, Ser. No. 133,728

Int. Cl. C07c *69/82*

U.S. Cl. 260—475 PR 14 Claims

The preparation of bis(2-hydroxyalkyl terephthalate or isophthalate by reacting terephthalic acid or isophthalic acid with an alkylene oxide in an aromatic medium, followed by extraction of the thus formed diester from the aromatic medium with water and crystallization from the water. Treating steps such as hydrogenation and/or the addition of chemical treating agents may also be included.

3,706,786

CHLORONITROPHENYL ESTERS OF POLYCARBOXYLIC ACIDS

Delta W. Gier, Laurinberg, N.C., and Daniel M. Wasleski, Kansas City, Mo., assignors to Chemagro Corporation, New York, N.Y.

Division of Ser. No. 675,287, Oct. 16, 1967, Pat. No. 3,555,160. This application Feb. 13, 1970, Ser. No. 11,293

Int. Cl. C07c *149/00*

U.S. Cl. 260—479 S 4 Claims

Compounds of the formulas

1. $R_2OOC(CH_2)_nCOOR_1$,
2. $R_2OOCCH{=}CHCOOR_1$,
3. R_2OOC

$COOR_1$, and

4. $R_2OOC(CH_2)_mS(CH_2)_mCOOR_1$

are useful as fungicides, herbicides and nematocides. R_1 and R_2 are mono to trihalo mono to dinitrophenyl or mono halo mono methyl nitrophenyl m is 1, 2 or 3 and n is an integer from 0 to 8. Compounds of formulas (1), (2) and (3) are plasticizers for cellulose esters and synthetic resins and compounds of formula (4) are stabilizers for mono and diolefin polymers.

3,706,787

ALKYL ESTERS OF FLUOROALKYL DICARBOXYLIC ACIDS

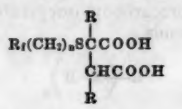
Robert Bonner Hager, Collegeville, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

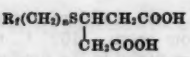
No Drawing. Continuation-in-part of application Ser. No. 839,077, July 3, 1969, which is a continuation-in-part of application Ser. No. 651,967, July 10, 1967, now Patent No. 3,471,518. This application July 7, 1971, Ser. No. 160,572

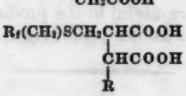
Int. Cl. C07c *149/20*

U.S. Cl. 260—481 R 3 Claims

Alkyl esters of perfluoroalkyl alkylene thiocarboxylic acids are disclosed wherein the acids are represented by the structures:

(I) 

(II) 

(III) 

where R_f is perfluoroalkyl, n=1–3, and R is H, CH_3, or C_2H_5, and where in Formula I at least one R is H. The esters are readily converted to the acids which are useful for imparting oil and water repellency to leather.

3,706,788

N,N-DIFLUOROCARBAMATES

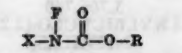
Vytautas Grakauskas, Arcadia, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

No Drawing. Application May 31, 1966, Ser. No. 554,947, which is a continuation-in-part of application Ser. No. 404,210, Oct. 14, 1964. Divided and this application July 6, 1970, Ser. No. 52,708

Int. Cl. C07c *125/04*

U.S. Cl. 260—482 C 5 Claims

Novel fluorinated compounds of the formula:



wherein R is an aliphatic radical and X is hydrogen or fluoride and process for manufacture.

3,706,789

$PGF_2\alpha$

Sune Bergstrom, and Jan Sjovall, both of Kemiska Institutionen, Karolinska Institutet, Stockholm 60, Sweden

Continuation-in-part of Ser. No. 203,752, June 20, 1962, Pat. No. 3,598,858, which is a continuation-in-part of Ser. No. 119,209, April 9, 1962, abandoned, which is a continuation-in-part of Ser. No. 738,514, May 28, 1958, Pat. No. 3,069,322. This application Feb. 12, 1971, Ser. No. 115,111

Claims priority, application Great Britain, March 29, 1962, 12,139/62

Int. Cl. C07c *61/32*, *69/74*

U.S. Cl. 260—468 D 12 Claims

The prostaglandins $PGF_2\alpha$ and $PGF_2\beta$, and their salts, esters, and alkanoates are disclosed. These novel compounds

are useful for a variety of pharmacological purposes, including use as smooth muscle stimulants and as cardiovascular agents.

3,706,790

(MONO-AND DI-SUBSTITUTED SULFAMOYL) BENZOIC ACIDS

James M. Sprague, Gwynedd Valley, and Carl Ziegler, Glenside, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 27, 1970, Ser. No. 15,203
Int. Cl. C07c *143/78*
U.S. Cl. 260—518 A 4 Claims

(Mono- and di-substituted sulfamoyl)benzoic acids and the salt, ester and amide derivatives thereof wherein the benzene ring may be substituted by one or more halo, lower alkyl, trihalomethyl, sulfamoyl, alkylsulfonyl, nitro, carboxy, amino, halosulfonyl or hydrocarbylene radicals. The products are prepared by treating a halosulfonylbenzoic acid with a primary or secondary amine and are useful as uricosuric agents in the treatment of gout and gouty arthritis.

3,706,791

SURFACE ACTIVE SULFONATES AND PROCESS OF PREPARING SAME BY THE REACTION OF ALPHA OLEFINS AND BISULFITE

Hillary Robinette, Jr., Philadelphia, Pa., assignor to Robinette Research Laboratories, Inc., Berwyn, Pa.

Filed March 18, 1970, Ser. No. 20,814
Int. Cl. C07c *143/02*
U.S. Cl. 260—513 B 18 Claims

Surface active alkane sulfonates prepared by agitating an aqueous solution of a bisulfite and an alcoholic solution of an olefin of seven to 20 carbon atoms or mixtures thereof in the presence of a small quantity of a diazo or azobis compound such as azobisisobutyronitrile, azobis-(α, γ-dimethylvaleronitrile) or diazoaminobenzene serving as a free radical-forming initiating catalyst. During the course of the reaction, a dispersion of a two phase system is maintained and the temperature of the reaction is kept below the boiling point of the alcohol used. The products are hydrolysis and heat stable, have excellent color and are useful as textile softeners, textile anti-static agents, emulsifying agents, wetting agents, dyeing assistants, bio-degradable detergents, lubricants, dispersing agents, and the like. The products can be employed as the clear reaction mixture at the end of the reaction or as a solid material after evaporation of the alcohol or the alcohol and water therefrom.

3,706,792

SUBSTITUTED PHENYLSULFONYLMETHYL SALICYLIC ACIDS AND ESTERS AND SALTS THEREOF

Tsung-Ying Shen, Bruce E. Witzel, and Gordon L. Walford, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 836,641, June 25, 1969. This application Apr. 20, 1970, Ser. No. 30,291
Int. Cl. C07c *65/14*
U.S. Cl. 260—520 4 Claims

Substituted (benzylthio)-salicylic acids, (phenylmercaptomethyl)-salicylic acids and phenyl disulfide salicylic acids and the non-toxic pharmaceutical accepted salts, esters, amides and various derivatives thereof. Also a method of treating inflammation which comprises administering the above compounds and various derivatives are also claimed. The substituted (benzylthio)-salicylic acids, (phenylmercaptomethyl)-salicylic acids and phenyl disulfide salicylic acids described herein have anti-inflammatory, anti-pyretic and analgesic activity.

3,706,793

RECOVERY OF POLYHYDRIC ALKANOLS AND METAL SALTS OF ALKANOIC ACIDS

Roy H. Prinz, Robstown, Tex., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,640
Int. Cl. C07c *29/26, 51/44*
U.S. Cl. 260—542 9 Claims

Alkali or alkaline earth metal salts and polyhydric alcohols are recovered from aqueous solution by first mixing with the aqueous solution an organic solvent composed of acetone and a C_1 to C_2 alkanol so as to precipitate the metal salt. The polyhydric alcohol is then recovered from the mother liquor by crystallization after removal of the organic solvent by distillation.

3,706,794

PRODUCTION OF SULPHONYL CHLORIDES

Patrick James Horner, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 16, 1967, Ser. No. 616,467
Claims priority, application Great Britain, Feb. 28, 1966, 8,719/66
Int. Cl. C07c *143/70*
U.S. Cl. 260—543 R 5 Claims

A sulphonyl chloride is produced from the corresponding free sulphonic acid using a catalytic amount of a chlorinated tertiary organic amide and excess chlorinating agent by introducing the sulphonic acid no faster than it is used up.

3,706,795

CONVERSION OF 2,2-BIS(FLUOROPERHALOMETHYL)-3,4-DIFLUOROOXETENE TO THE CORRESPONDING FLUOROPERHALO - 3-METHYL-2-BUTENOYL FLUORIDE

Bernard M. Lichstein, Elizabeth, and Cyril Woolf, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 600,047, Dec. 8, 19o6. This application Aug. 18, 1969, Ser. No. 851,043
Int. Cl. C07c *51/58, 57/02, 69/52*
U.S. Cl. 260—544 F 5 Claims

2,2-bis(fluoroperhalomethyl) - 3,4-difluorooxetenes can be converted in the presence of a free radical initiator, such as iodine, to the corresponding fluoroperhalo-3-methyl-2-butenoyl fluorides, which are useful as intermediates in the preparation of surfactants and other useful compounds.

3,706,796

SUBSTITUTED AMIDES

Edward S. Blake, Dayton, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 25, 1970, Ser. No. 92,898
Int. Cl. C07c *103/30*
U.S. Cl. 260—558 D 10 Claims

Substituted amides as new chemical compounds. These compounds have been found to be useful in the control of bacteria.

3,706,797

BISACYL AMINIMIDES

William J. McKillip and Lawrence M. Clemens, Minneapolis, Minn., assignors to Ashland Oil, Inc., Ashland, Ky.

No Drawing. Continuation-in-part of application Ser. No. 485,618, Sept. 7, 1965. This application Aug. 6, 1969, Ser. No. 848,066
Int. Cl. C07c *103/54*
U.S. Cl. 260—558 H 7 Claims

Isocyanate precursors in the form of novel diaminimides are provided by reaction of a diacyl dichloride

with an unsymmetrical hydrazine, quaternizing the resultant bisacyl hydrazide which is then titrated with a base to yield the bisacyl aminimide.

3,706,798
BISOXALIC ACID DIAMIDES

Max Dunnenberger, Frenkendorf, Basel-Land, and Hans Rudolf Biland, Gelterkinden, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Apr. 12, 1971, Ser. No. 133,377
Int. Cl. C07c *103/32*
U.S. Cl. 260—559 A **5 Claims**

New bisoxalic acid diamides are stabilisers for organic materials. They are prepared by reacting an oxalic acid monoamide or the chloride or an ester thereof with an alkylendiamine.

3,706,799
NAPHTHYLOXYSALICYLANILIDES

David Richard Duke Osborne, Riseley, England, assignor to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Dec. 3, 1969, Ser. No. 881,869
Claims priority, application Great Britain, Dec. 3, 1968, 57,429/68
Int. Cl. C07c *103/26*
U.S. Cl. 260—559 S **9 Claims**

New naphthyloxy-substituted anilides are disclosed. The compounds are useful germicidal agents. Preferred compounds contain halogen substituents.

3,706,800
PROCESS FOR THE PREPARATION OF AMINIMIDES

James A. Hartlage, Burnsville, and William J. McKillip, Minneapolis, Minn., assignors to Ashland Oil, Inc., Houston, Tex.

No Drawing. Continuation-in-part of abandoned application Ser. No. 514,705, Dec. 17, 1965. This application Feb. 26, 1970, Ser. No. 14,668
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 H **12 Claims**

This invention relates to a process for the preparation of trialkylammonium acrylimines, trivially designated aminimides. More specifically, the present invention relates to a one-step process for preparing an aminimide from a carboxylic acid ester.

3,706,801
1-AMINOADAMANTAN-4-OLS

Milton E. Herr, Kalamazoo, Herbert C. Murray, Hickory Corners, and Gunther S. Fonken, Galesburg, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 666,990, Sept. 11, 1967, which is a continuation-in-part of application Ser. No. 528,346, Feb. 18, 1966. This application Jan. 21, 1970, Ser. No. 4,773
Int. Cl. C07c *87/40*
U.S. Cl. 260—563 P **7 Claims**

Novel compounds of the formula:

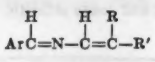
wherein R is hydrogen, an alkyl radical of 1 to 18 carbon atoms, inclusive, or a cycloalkyl radical of 5 to 15 carbon atoms, inclusive; R_1 is hydrogen, an alkyl radical of 1 to 18 carbon atoms, inclusive, or the cycloalkylmethyl radical, $—CH_2—R_3$ in which R_3 is a cycloalkyl radical of 3 to 6 carbon atoms, inclusive, and the pharmacologically acceptable acid addition salts thereof. The novel compounds are of particular value as central nervous system stimulants.

3,706,802
N-(2,2-DI-SUBSTITUTED-VINYL)-ARYLIMINES

Joseph T. Arrigo, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Sept. 26, 1969, Ser. No. 861,455
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 F **7 Claims**

A novel compound of the following formula



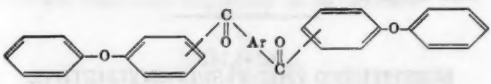
where Ar is aryl and R and R' are hydrocarbyl or together form a carbocyclic ring. These novel compounds are prepared by reacting an arylaldehyde with an N-(2,2-dihydrocarbylethylidene) - 2,2 - dihydrocarbylvinylamine or an N,N' - bis - (2,2 - dihydrocarbylethylidene) - 2,2 - dihydrocarbylethylidenediamine. These compounds are useful as metal deactivators, antiozonants, etc.

3,706,803
BIS(PHENOXYBENZOYL) AROMATIC COMPOUNDS

Robert Salle, Bernard Sillion, and Gabriel de Gaudemaris, Grenoble (Isere), France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmaison, Hauts-de-Seine, France

No Drawing. Filed Dec. 4, 1969, Ser. No. 882,322
Claims priority, application France, Dec. 17, 1968, 179,056
Int. Cl. C07c *49/76*
U.S. Cl. 260—591 **13 Claims**

For use as heat exchange fluids or lubricants, there are provided aromatic and heterocyclic ketoethers of the formula:



These compounds are produced by reacting a magnesium derivative of a halodiphenylether with an aromatic dinitrile.

3,706,804
QUATERNARY ALKYL ALIPHATIC KETONES

John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Continuation-in-part of applications Ser. No. 854,778, Sept. 2, 1969, and Ser. No. 879,620, Nov. 24, 1969. This application Jan. 27, 1970, Ser. No. 6,291
Int. Cl. C07c *49/20*
U.S. Cl. 260—593 R **19 Claims**

Quaternary alkyl aliphatic hydrocarbon ketones prepared by reaction of acid with alkyl lithium useful as insect control agents and intermediates.

3,706,805

PROCESS FOR THE PREPARATION OF ARYL SULFIDES

Tamotsu Fujisawa, Yamato-shi; Noriko Ohtsuka, Sagamihara-shi; Takeo Kobori, Makano-ku, and Genichi Tsuchihashi, Tokyo, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Continuation-in-part of Ser. No. 719,743, April 8, 1968. Filed Sept. 16, 1970, Ser. No. 72,821

Claims priority, application Japan, April 15, 1967, 42/24395

Int. Cl. C07c *149/30*

U.S. Cl. 260—609 E 8 Claims

Aromatic sulfides are prepared by reacting 6—20 molar proportions of certain aromatic compounds with one molar proportion of a sulfur chloride in the presence of iron at 0°–50° C. The compounds have a variety of uses, including use as herbicides and fungicides.

3,706,806

PROPYL OR BUTYL DITHIOL FORMAL

Christian Esclamadon, Billere, Yves Labat, Pau, and Jean-Baptiste Signouret, Billere, France, assignors to Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine, Courbevoie, France

No Drawing. Filed Jan. 28, 1970, Ser. No. 6,570

Claims priority, application France, Jan. 31, 1969, 6902063

Int. Cl. C07c *149/14*

U.S. Cl. 260—609 R 3 Claims

New dithiol compounds include a formal group and have the general formula HS—R—O—CH_2—O—R—SH, in which R is a hydrocarbon group of from 1 to 12 carbon atoms, which can be substituted or unsubstituted aliphatic, cycloalkyl or aromatic radicals. These compounds are prepared by causing a chloroalkyl alcohol (Cl—R—OH) to react with formaldehyde so as to effect the acetalization of the alcohol and by treating the dichloro dialkyl formal which is obtained with an acid sulphide of an alkali metal and with hydrogen sulphide. These new dithiol compounds are used for the plasticisation of sulphur and for the production, as new industrial products, of plasticised sulphur compositions.

3,706,807

PREPARATION OF ALKYL-SUBSTITUTED PHENOLS

Robert W. Etherington, Jr., Pennington, and Warren W. Kaeding, Westfield, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Mar. 20, 1969, Ser. No. 808,986

Int. Cl. C07c *37/12*

U.S. Cl. 260—624 C 8 Claims

A method of preparing an alkyl-substituted phenol which comprises contacting a phenol with an organic compound having an available alkyl group in the presence of a catalytically-active ZSM-4 zeolite.

3,706,808

PRODUCTION OF NITROALKANES

Gustave Bryant Bachman, Lafayette, and Stephen E. Eisenstein, West Lafayette, both of Ind., assignors to Purdue Research Foundation.

Filed Oct. 18, 1971, Ser. No. 190,403

Int. Cl. C07c *79/04*, *79/08*

U.S. Cl. 260—644 5 Claims

A process for the production of a nitroalkane or dinitroalkane by reacting an olefin or diolefin with nitric acid in the presence of a lower aliphatic monocarboxylic acid anhydride, thereby producing a nitro-ester or dinitro-ester, and reducing the nitro-ester or dinitro-ester with an alkali borohydride to produce the nitroalkane or dinitroalkane.

3,706,809

PROCESS FOR PREPARING HIGHLY REACTIVE ORGANO-MAGNESIUM COMPOUNDS

Tatsuo Moroe, Akira Komatsu, Susumu Akutagawa, and Toshiaki Sakaguchi, Tokyo, and Hirokazu Matsuyama, Yokohama, Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

No Drawing. Filed Sept. 17, 1970, Ser. No. 73,176

Int. Cl. C07f *3/02*

U.S. Cl. 260—665 R 7 Claims

A process for the preparation of a highly reactive organo-magnesium compound which comprises reacting a conjugated diene compound with metallic magnesium in a solvent selected from the group consisting of an ether compound and a mixture of said ether compound with a Gregnard reagent inactive solvent, in the presence of a Lewis acid catalyst with the proviso that the Lewis acid catalyst may not be a catalyst of metals belonging to Group I–A and Group II–A of the Periodic Table, to thereby directly combine said conjugated diene compound with said metallic magnesium with the further proviso that said conjugated diene compound does not contain conjugated double bonds which are stabilized in the ring of a cyclic compound.

3,706,810

N-MORPHOLINOALKYL-THIENO[3,2-b]PYRROLE-5-CARBOXAMIDES

Herbert Joseph Brabander, Nanuet, N.Y., and William Blythe Wright, Jr., Woodcliff Lake, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Sept. 15, 1970, Ser. No. 72,524

Int. Cl. C07d *87/46*

U.S. Cl. 260—247.1 5 Claims

The preparation of N-(aminoalkyl) derivatives of thieno[3,2-b]pyrrole-5-carboxamides by several methods is described. One method is reacting a thieno[3,2-b]pyrrole-5-carboxylic acid with N,N'-carbonyldiimidazole and subsequently with an alkylene diamine. The substituted thieno[3,2-b]pyrrole-5-carboxamides are useful as analgesic and anti-depressant agents.

3,706,811

OXIDATIVE DEALKYLATION AND DEHYDROGENATION OF TERT-ALKYL AROMATICS

Roy B. Duke, Jr., Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

No Drawing. Filed Sept. 16, 1970, Ser. No. 73,250

Int. Cl. C07c *15/10*

U.S. Cl. 260—669 R 23 Claims

Tert-alkyl aromatics, e.g., tert-butylbenzene, are dealkylated and dehydrogenated by passing over catalyst, e.g., copper chromite in the presence of halogen and oxygen, e.g., tert-butylbenzene in the presence of oxygen and iodine gives alpha-methylstyrene.

3,706,812

FLUID-SOLID CONTACTING APPARATUS

Armand J. de Rosset, Clarendon Hills, and Richard W. Neuzil, Downers Grove, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

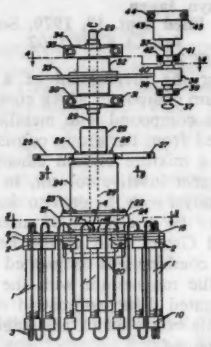
Filed Dec. 7, 1970, Ser. No. 95,673

Int. Cl. C07c *7/12*

U.S. Cl. 260—674 SA 11 Claims

A fluid-solid contacting apparatus comprising a plurality of adsorbent chambers which are serially connected in a continuous closed loop system. The adsorbent chambers are interconnected by flow conduits which also contain fluid transfer taps and through which the flow of a fluid material may be passed to simulate a countercurrent continuous type flow process. The apparatus con-

tains unidirectional flow directing means which are located between each adsorbent chamber and which allow



a unidirectional flow of fluid when there is flow between the adsorbent chambers.

3,706,813

SELECTIVELY ADSORBING MULTIBRANCHED PARAFFINS

Richard W. Neuzil, Downers Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed July 8, 1971, Ser. No. 160,901

Int. Cl. C10g *25/04*; C07c *9/16*

U.S. Cl. 260—676 MS **7 Claims**

A process for the separation of hydrocarbons utilizing a crystalline aluminosilicate adsorbent containing a specific cation ion-exchanged thereon and a specified range of water contents to provide a selective adsorption of a hydrocarbon type from a feed stream containing a mixture of hydrocarbons. Specifically, the separation involves selectively separating multibranched paraffins from a feed stream which contains a mixture of multibranched paraffins together with singly branched paraffins and/or normal paraffins. The separation can take place utilizing batch methods, moving bed systems, or simulated moving bed countercurrent flow schemes. Both liquid phase and vapor phase operations are anticipated. Specific feedstocks utilized in this process include high octane components—namely, the C_5 and C_6 hydrocarbons and specifically dimethylbutanes, methylpentanes and the normal hexanes and pentanes.

3,706,814

CONTINUOUS PROCESS FOR PRODUCING GASOLINE BLENDING COMPONENTS

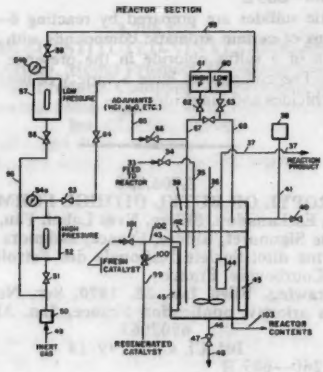
Francis William Kirsch, Wayne, David S. Barmby, Media, and John D. Potts, Springfield, Pa., assignors to Sun Oil Company, Philadelphia, Pa.

Continuation-in-part of applications Ser. No. 581,129, Aug. 25, 1966, now abandoned, Ser. No. 715,998, Mar. 26,1968, now Patent No. 3,624,173, Ser. No. 716,190, Mar. 26, 1968, Ser. No. 749,714, Aug. 2, 1968, Ser. No. 823,656, May 12, 1969, Ser. No. 830,687, June 5, 1969, now Patent No. 3,655,813, and Ser. No. 840,110, June 16, 1969, now abandoned. This application May 4, 1970, Ser. No. 34,209

Int. Cl. C07c *3/52*

U.S. Cl. 260—683.43 **7 Claims**

A process for the continuous preparation of gasoline blending components comprises contacting, in a continuous stirred reactor, an acidic zeolite catalyst and a liquid feed containing C_4–C_6 isoparaffin and C_2–C_9 monoolefin at 25–200° C. and 14–800 p.s.i., continually introducing the liquid feed and simultaneously continually withdrawing a reactor product stream free of catalyst from the reactor wherein the feed stream and the product stream are introduced and withdrawn respectively at the same rate, the paraffin/olefin molar ratio in the reaction



mixture being at least 10 to 1. Preferably an additional acyclic feed component is added, comprising C_9^+ olefin or C_6^+ paraffin (such as Udex raffinate). Also preferred is to constantly withdraw a slipstream of the reaction mixture containing aged catalyst and to constantly introduce, at the same rate, an active catalyst stream to the reactor and to regenerate and activate the catalyst from said sidestream.

3,706,815

CHELATED METAL-POLYPHOSPHORIC ACID CATALYSTS, METHOD OF PREPARATION AND ISOMERIZATION PROCESS UTILIZING THE SAME

Starling K. Alley, Jr., Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 877,435, Nov. 17, 1969. This application May 24, 1971, Ser. No. 146,533

Int. Cl. B01j *11/82*; C07c *5/24*

U.S. Cl. 260—683.65 **12 Claims**

Novel catalysts are prepared by chelating ions of a Group VIII noble metal, e.g., platinum, with a polyphosphoric acid and depositing the chelate on a porous support. The catalyst is especially useful for isomerizing hydrocarbons.

3,706,816

MANUFACTURE OF 1,1,1-TRICHLOROETHANE

Alastair Campbell and Rosemary Angela Carruthers, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Sept. 22, 1969, Ser. No. 860,032

Claims priority, application Great Britain, Oct. 9, 1968, 47,796/68, 47,797/68

Int. Cl. C07c *17/00*

U.S. Cl. 260—658 R **1 Claim**

An integrated process for the manufacture of 1,1,1-trichloroethane based on ethylene and chlorine. Chlorine is reacted with ethyl chloride and 1,1-dichloroethane in an unpacked reaction zone. A light fraction from the chlo-

rination zone comprising ethylene and chloroethylenes together with ethylene feedstock are reacted with HCl and the resulting ethyl chloride and 1,1-dichloroethane are fed to the chlorination zone.

3,706,817

BLOCK COPOLYMERS HAVING DISSIMILAR NONELASTOMERIC POLYMER BLOCKS

Milton M. Wald and Myron G. Quam, deceased, by Milton M. Wald, legal representative, Walnut Creek, Calif.; said Wald assignor to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 806,763, Dec. 24, 1968, which is a continuation-in-part of abandoned application Ser. No. 333,671, Dec. 26, 1963. This application May 5, 1971, Ser. No. 140,613

Int. Cl. C08f *19/06, 19/08*

U.S. Cl. 260—880 B 6 Claims

The resistance to creep is substantially improved in block copolymers which are selectively hydrogenated and have within the same block copolymeric molecules nonelastomeric blocks A and C and elastomeric blocks B wherein, prior to hydrogenation, blocks A are homopolystyrene blocks, blocks B are conjugated diene polymer blocks and blocks C are homopolymer blocks of alpha methyl styrene; and due to hydrogenation, no more than about 25% of the double bonds in blocks A and C are reduced and at least 90% of the aliphatic double bonds of blocks B are reduced.

3,706,818

PROCESSES USING POLYPEROXIDES AFFORDING SEQUENTIAL FREE RADICAL GENERATION

Orville Leonard Magell, Kenmore, and Antonio Joseph D'Angelo, Buffalo, N.Y., assignors to Pennwalt Corporation

No Drawing. Filed July 17, 1968, Ser. No. 745,416

Int. Cl. C08f *19/10*

U.S. Cl. 260—885 7 Claims

Organic syntheses requiring free radical initiation in two stages are carried out using as the source of sequential free radicals a polyperoxy compound having at least two functional peroxy groups, at least one of these having a half-life different from the other functional peroxy groups.

Example: Styrene monomer and di-t-butyl alpha-(methoxycarbonyl)diperoxysuccinate were reacted at about 60° C. to obtain a polystyrene containing functional peroxy groups. The polystyrene-peroxy polymer was reacted with methyl methacrylate monomer at 85° C. to obtain a block copolymer of polystyrene and poly (methyl methacrylate).

3,706,819

VULCANIZABLE RUBBER COMPOSITION COMPRISING ACCELERATOR EPDM AND DIOLEFIN RUBBER

Teruyoshi Usamoto, Osaka, Yasutaka Hatada, Higashi-Osaka, Itsuro Furuichi, Toyonaka, and Masao Matsuo, Takatsuki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Sept. 9, 1970, Ser. No. 70,934

Claims priority, application Japan, Sept. 16, 1969, 44/73,448

Int. Cl. C08f *29/12, 41/12*

U.S. Cl. 260—889 13 Claims

Blends of EPDM with highly unsaturated rubbers are co-cured with sulfur using as accelerators higher alkyl thiuram disulfides (e.g., tetralaurylthiuram disulfide) or benzothiazylsulfenamides (e.g., N-laurylbenzothiazylsulfenamide).

3,706,820

S-ALKYLMERCAPTOMETHYLTHIOPHOSPHORIC OR PHOSPHONIC ACID ESTERS

Hellmut Hoffmann, Wuppertal-Elberfeld, and Ingeborg Hammann, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

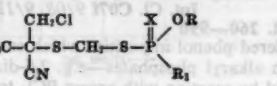
No Drawing. Filed Mar. 4, 1971, Ser. No. 121,190

Claims priority, application Germany, Mar. 7, 1970, P 20 10 889.8

Int. Cl. C07f *9/24;* A01n *9/36*

U.S. Cl. 260—940 6 Claims

S-alkylmercaptomethyl-thio- or -dithio-phosphoric or -phosphonic acid esters of the general formula:



(I)

in which:

R is a lower alkyl radical,

R_1 is a lower alkyl or alkoxy radical, and

X is an oxygen or sulfur atom,

to a process for their preparation and to their use as insecticides or acaricides.

3,706,821

NOVEL PHOSPHORUS AND HALOGEN-CONTAINING COMPOUNDS

James J. Anderson, Wendell M. Byrd, Jr., and Vasco G. Camacho, Richmond, Va., assignors to Mobil Oil Corporation

No Drawing. Continuation-in-part of application Ser. No. 826,019, May 19, 1969. This application Sept. 18, 1969, Ser. No. 859,196

Int. Cl. C07f *9/12;* C09k *3/28;* C08f *45/58*

U.S. Cl. 260—951 7 Claims

The flammability of polymeric materials is substantially reduced or obviated by associating therewith novel halogen-containing phosphites, phosphates and phosphonates having characterizing groups

Polymeric materials can be processed at elevated temperatures of the order of 250–300° C. with certain of the phosphorus compounds.

3,706,822

METHOD OF REFINING ESTERS OF ORGANOPHOSPHORUS

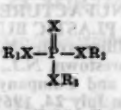
James E. Caldwell, 535 Coppinger Drive, Ferguson, Mo. 63135, and Ronald R. Sorrell, Apt. 7, 4130 Geraldine, St. Ann, Mo. 63074

No Drawing. Filed Oct. 2, 1969, Ser. No. 863,334

Int. Cl. C07f *9/08, 9/16, 9/40*

U.S. Cl. 260—990 15 Claims

Organophosphorus acid esters of the formula



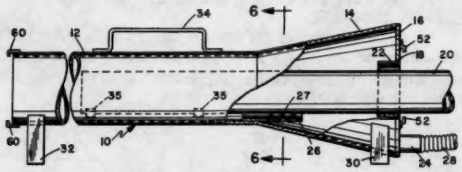
wherein R_1, R_2 and R_3 individually represent alkyl, aryl, alkaryl, aralkyl, haloalkyl, haloaryl, nitroalkyl, nitroaryl, alkoxyalkyl, alkoxyaryl, cyanoaryl, haloalkaryl and alkylthioalkyl, and X represents oxygen, sulfur, or a carbon-phosphorus bond, at least two of X being oxygen or sulfur, are prepared wherein certain wash-improving agents are added to the lye and/or water washes during the refining of the crude organophosphorus esters. The organophosphorus esters prepared by the method

of this invention have utility as flexibilizing plasticizers for polyvinylchloride compositions, as synthetic lubricants and force transmission fluids, as film-forming addition agents for extreme pressure lubricants and as insecticides.

3,706,823
PURIFICATION OF ALKARYL PHOSPHATES
Gordon A. Rampy, Nitro, and Norman C. Parsons and Mabel H. Ryder, St. Albans, W. Va., assignors to FMC Corporation, New York, N.Y.
No Drawing. Filed Aug. 24, 1970, Ser. No. 66,553
Int. Cl. C07f 9/08, 9/12
U.S. Cl. 260—990 2 Claims

Hindered phenol impurities which cause color development in alkaryl phosphates—e.g. 2,6-dialkylphenols—are removed by reaction with excess PCl_5 to form the alkaryl phosphoric chlorides, which are then removed from the alkaryl phosphate by treatment with water, preferably combined with alkali.

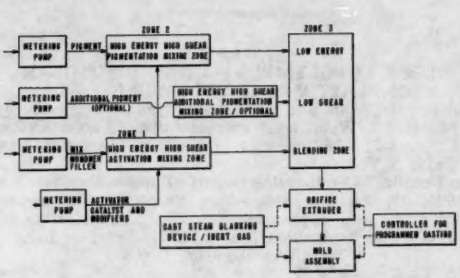
3,706,824
SYSTEM FOR HEATING A SECTION OF PIPE
Buel D. Huber, 11848 Altadena, Lakeside, Calif. 92040, and Howard M. Enloe, 509 Hemerick, Huston, Mo. 65483
Filed Feb. 22, 1971, Ser. No. 117,286
Int. Cl. F27b 17/00
U.S. Cl. 263—2 R 9 Claims



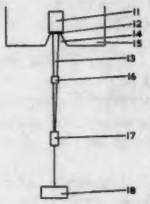
A system for heating a section of pipe sufficiently to allow bending of the pipe for making curves and right angle bends for installation. The heater has a body portion including an elongated heating chamber with openings at each end for receiving a section of plastic or other heat pliable pipe, and a gas injection section for receiving but diffusing the heated exhaust gas of an internal combustion engine. A supplemental device is utilized for heating the interior of the pipe and comprises an elongated cylindrical member with a plurality of holes for distributing gas supplied to the center of the cylinder into contact with the inside diameter of the pipe to be heated.

3,706,825
PROCESS FOR MANUFACTURE OF AN IMPROVED MULTI-COLORED PLASTIC BUILDING PRODUCT
Nelson Lee Hall, Williamsville, N.Y., and Donald Hillman Slocum, Moorestown, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Original application July 24, 1969, Ser. No. 844,509. Divided and this application June 9, 1970, Ser. No. 57,014
Int. Cl. B29c 9/00; B29f 3/12
U.S. Cl. 264—75 5 Claims

A multi-colored cast plastic building product of uniformity and strength including a mass of polymeric material having distributed and suspended therein at least one smaller elongated continuous pattern of a different colored polymeric material in a predetermined reproducible three dimensional configuration and a manufacturing arrangement for producing the same so that the polymeric materials are substantially equally matched as to degree of polymerization at the time of being cast to give uniformity of all properties except color in the final product.



3,706,826
MELT SPINNING PROCESS
James Duncan Bremner and Iain Alexander McLellan, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England
Filed May 21, 1970, Ser. No. 39,525
Claims priority, application Great Britain, May 23, 1969, 26,429/69
Int. Cl. B28b 3/20
U.S. Cl. 264—176 F 6 Claims

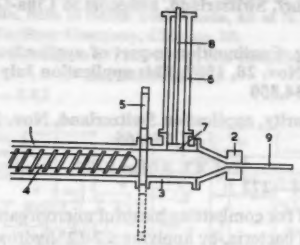


A method for decreasing the birefringence of a melt spun filament by applying a forwarding force to a filamentary stream in a region where the filament is in an intermediate plastic state, the forwarding force being sufficiently small such that the filament is under positive tension throughout the process sequence.

3,706,827
METHOD FOR FLOW RATE CONTROL
Robert Edward Nott and David Robin Lander, Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England
Continuation of abandoned application Ser. No. 809,163, Mar. 21, 1969. This application June 2, 1971, Ser. No. 149,372
Claims priority, application Great Britain, Mar. 28, 1968, 14,964/68
Int. Cl. B28b 3/20
U.S. Cl. 264—176 4 Claims

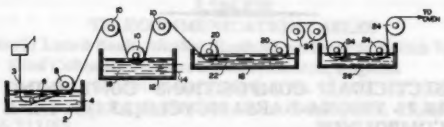
A method and apparatus which allows a substantially constant flow rate of viscous material through a die while

permitting variations or interruptions in the flow at an earlier stage, by means of providing for changes in the



available capacity for the viscous material prior to the die.

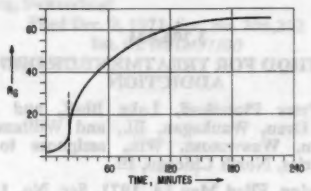
3,706,828
WET SPINNING NON-CIRCULAR POLYACRYLONITRILE FIBERS BY UTILIZING CIRCULAR ORIFICES AND SEQUENTIAL COAGULATION
Leonidas S. Tzentis, Zurich, Switzerland, assignor to Dow Badische Company, Williamsburg, Va.
Filed Aug. 19, 1969, Ser. No. 851,368
Int. Cl. D01f 7/02
U.S. Cl. 264—182 **10 Claims**

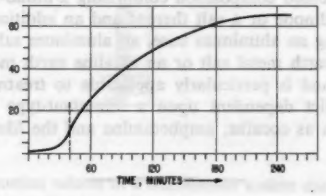


A method of producing synthetic fibers having tough outer skins and dog-bone or other non-circular cross-sections which comprises spinning said fiber and subjecting the spun fiber to sequential coagulation treatments whereby the outer core is coagulated and shrinks to a tough shell, surrounding the inner core which is incompletely coagulated and collapsed. The fibers may be used in conventional textile materials.

3,706,829
AUTOMATED PROCESS FOR THE HYDROLYSIS OF TITANIUM SULFATE SOLUTIONS
Monroe M. Solomka, Bilbao, and Enrique Renteria Aguirre, Plencia, Spain, assignors to Dow-Unquinesa S.A., Erandio, Bilbao, Spain
Filed Nov. 19, 1970, Ser. No. 91,039
Claims priority, application Spain, Nov. 22, 1969, 373,807
Int. Cl. C01g 23/06
U.S. Cl. 423—615 **18 Claims**

The hydrolysis of titanium sulfate solutions is performed and controlled by heating a seeded titanium sulfate solution with agitation while simultaneously measuring the reflectance of the resulting suspension, until a critical point is attained as indicated by a substantial change in the rate of reflectance per unit of hydrolysis time, allowing the solution to remain quiescent for from 5 to 60 minutes, then resuming the heating of the solution until the hydrolysis produces the desired yield of titanium hydrate. The measurement of reflectance may be





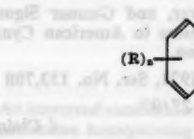
made by photoelectric means, and the point of inflection of the reflectance curve or its first or second derivative with respect to time may be used to control the hydrolysis process.

ERRATUM

For Class 424—308 see:
Patent No. 3,706,762

3,706,830
2,4-BENZODIAZEPINES USED AS ANTI-HYPERTENSIVE AGENTS
Herman Robert Rodriguez, New York, N.Y., and George de Stevens, Summit, N.J., assignors to Ciba-Geigy Corporation
No Drawing. Continuation-in-part of application Ser. No. 840,833, July 10, 1969, which is a continuation-in-part of application Ser. No. 694,421, Dec. 29, 1967, which in turn is a continuation-in-part of application Ser. No. 630,497, Apr. 13, 1967, all now abandoned. This application Apr. 16, 1970, Ser. No. 29,257
Int. Cl. A61k 27/00
U.S. Cl. 424—244 **3 Claims**

4,5-dihydro-1H-2,4-benzodiazepines, e.g. those of the formula



R=H, alkyl, free, etherified or esterified OH or SH, CF_3, NO_2 or amino; n=1 or 2

R'=H, OH, SH, amino or an aliphatic, araliphatic or aromatic radical

acyl derivatives, N-oxides, quaternaries or salts thereof, are antihypertensives and increase the contractile force of the heart.

3,706,831

METHOD FOR TREATMENT OF DRUG ADDICTION

Nicholas Peter Plotnikoff, Lake Bluff, and Anthony Thomas Dren, Waukegan, Ill., and William George Jochimsen, Wauwatosa, Wis., assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed May 14, 1971, Ser. No. 143,652

Int. Cl. A61k 27/00

U.S. Cl. 424—153 11 Claims

Covers a method for the treatment of drug addiction comprising administering to a drug addict a composition selected from the group consisting of 2-imino-5-phenyl-4-oxazolidinone, a pharmaceutically-acceptable salt thereof or a combined composition comprising 2-imino-5-phenyl-4-oxazolidinone or a salt thereof and an additional agent comprising an aluminum base, an aluminum salt, and an alkaline earth metal salt or an alkaline earth metal base. The method is particularly applicable to treatment of a drug addict dependent upon a stimulant-type addictive drug such as cocaine, amphetamine and the like.

3,706,832

CERTAIN O-ALKYL-S-PHENYL-PHOSPHONO-THIOLATE FUNGICIDES

Seiichi Hirane, Masahiro Aya, and Shigeo Kishino, Tokyo, Japan, assignors to Nihon Tokushu Noyaku Seizo Kabushiki Kaisha, Tokyo, Japan, and Farbenfabriken Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

No Drawing. Original application Jan. 22, 1968, Ser. No. 699,296, now Patent No. 3,560,596, dated Feb. 2, 1971. Divided and this application June 1, 1970, Ser. No. 42,465

Int. Cl. A01n 9/36

U.S. Cl. 424—217 12 Claims

A process is provided for treating blast (*Piricuralia oxyzae*), brown spot (*Cochliobolus miyabeanus*) and sheath blight (*Hypochnus sasakii*) in rice plants comprising applying to either the plant, the seed or the soil a horticultural and agricultural fungicide containing as active ingredient at least one O-alkyl S-phenylbenzylphosphonothiolate compound.

3,706,833

USE OF 4,6-DIAMINOPYRIMIDINE HYDROCHLORIDE AS AN ANTIFUNGAL AGENT

Mary Eloise McCoy, Pearl River, and Gunnar Sigurd Redin, New City, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Apr. 13, 1971, Ser. No. 133,708

Int. Cl. A61k 27/00

U.S. Cl. 424—251 4 Claims

The method for the use of 4,6-diaminopyrimidine and salts thereof as antifungal agents in warm blooded animals and compositions containing said compound is described.

3,706,834

METHOD FOR COMBATTING BACTERIA USING CERTAIN 2-(2'-HYDROXYPHENYL)-OXAZOLES

Max Schellenbaum, Muttenz, and Max Duennenberger, Frenkendorf, Switzerland, assignors to Ciba-Geigy Corporation

No Drawing. Continuation-in-part of application Ser. No. 686,298, Nov. 28, 1967. This application July 14, 1970, Ser. No. 54,850

Claims priority, application Switzerland, Nov. 30, 1966, 17,154/66

Int. Cl. A01m 9/22

U.S. Cl. 424—272 5 Claims

A method for combatting harmful microorganisms, such as fungi and bacteria, by applying a 2-(2'-hydroxyphenyl)-oxazole.

3,706,835

CRASSIN ACETATE USED AS AN ANALGESIC

Donald Bruce Borders, Suffern, and Arnold Curtis Osterberg, Pearl River, N.Y., and Kenneth George Wallo, Wayne, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 24, 1971, Ser. No. 156,475

Int. Cl. A61k 27/00

U.S. Cl. 424—279 4 Claims

New compositions of matter and method of administration are described. The compositions contain as the active component crassin acetate. The compositions are useful for their analgesic activity in warm-blooded animals.

3,706,836

INSECTICIDAL COMPOSITIONS CONTAINING 2,6,7 - TRIOXA-1-ARSABICYCLO[2.2.2]OCTANE COMPOUNDS

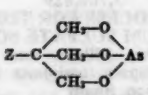
John F. Deffner, Glenshaw, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Original application Apr. 24, 1969, Ser. No. 819,122, now Patent No. 3,621,044, dated Nov. 16, 1971. Divided and this application Dec. 1, 1970, Ser. No. 94,630

Int. Cl. A01n 9/00, 9/02

U.S. Cl. 424—297 3 Claims

Insecticidal compositions comprise derivatives of 2,6,7-trioxa-1-arsabicyclo[2.2.2]octane and solutions thereof. The 2,6,7-trioxa-1-arsabicyclo[2.2.2]octane compounds are represented by the general formula



wherein Z can be alkyl, aryl, aralkyl, alkaryl, cycloalkyl, alkoxy, aryloxy, acyl, acyloxy, acyloxymethyl, benzoxymethyl, and chrysanthemumoxymethyl. Examples include

4-propyl-2,6,7-trioxa-1-arsabicyclo[2.2.2]octane

4-acetoxymethyl-2,6,7-trioxa-1-arsabicyclo[2.2.2]octane

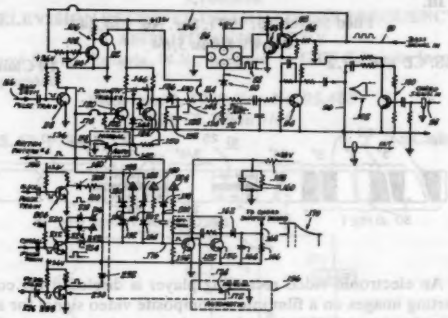
4-chrysanthemumoxymethyl-2,6,7-trioxa-1-arsabicyclo [2.2.2]octane.

ELECTRICAL

3,706,837
AUTOMATIC RHYTHMIC CHORDING UNIT

Alvan D. Arsem, Clarence; Harold O. Schwartz, and Anthony C. Ippolito, both of North Tonawanda, all of N.Y., assignors to The Wurlitzer Company, Chicago, Ill.

Filed June 17, 1971, Ser. No. 154,054
Int. Cl. G10f *1/00*
U.S. Cl. 84—1.03 4 Claims



A keyboard musical instrument is provided having a keyboard for playing solo or lead. Automatic switching also is provided for producing predetermined percussive-type rhythm patterns and sounds, and is operable with a plurality of chord buttons to play predetermined chords and also a related bass note. The chords and bass note may be alternated, the bass note being the root of the chord or its fifth preferably alternating.

3,706,838
TELECOMMUNICATION CABLES

David Luard Boult, Manley, England, assignor to British Insulated Callender's Cables Limited, London, England

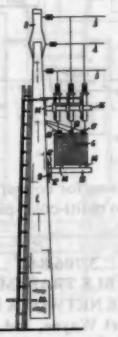
Filed Nov. 20, 1970, Ser. No. 91,507
Claims priority, application Great Britain, Nov. 19, 1969, 56,711/69
Int. Cl. H01b *7/02*
U.S. Cl. 174—25 R 10 Claims

A telecommunication cable comprises at least two cable units laid up together and enclosed in a water-proof sheath. Each cable unit comprises a multiplicity of conductors each having a dielectric of cellular plastics material, at least one layer of insulating tape, for instance paper, surrounding the multiplicity of conductors and, filling the interstices within the cable unit, a water-impermeable medium, for instance petroleum jelly, which will not drain under the influence of gravity or such hydrostatic pressure as may arise in the event of damage to the cable sheath but which will permit relative sliding movement of the cellular plastics insulated conductors over one another during such bending of the cable as occurs during manufacture and installation of the cable. The or each layer of insulating tape is impregnated with the water-impermeable medium and constitute a barrier to the ingress of water.

3,706,839
TRANSFORMER STATION CARRIED BY A MAST

Bernard Comte, 1723 Marly, and Victor Cler, 1700 Fribourg, both of Switzerland, assignors to Gram S.A., Broye, Fribourg, Switzerland

Filed Dec. 9, 1971, Ser. No. 206,292
Int. Cl. H01b *31/00*
U.S. Cl. 174—45 TD 17 Claims



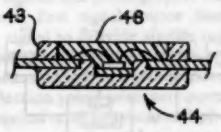
The invention relates to a transformer station carried by a mast. Such a station comprises a transformer and a high voltage connection device last fastened onto the mast the one above the other. A low voltage connection device is located within the hollow mast. An access device to the high voltage circuit-breaker is provided and comprises a ladder, the lower portion of which is foldable, a footbridge surrounded by a hand rail.

The station is remarkable in that it comprises further a safety device hindering the unfolding of the ladder as long as the high voltage line as well as the primary of the transformer has not both been grounded.

3,706,840
SEMICONDUCTOR DEVICE PACKAGING

Kenneth J. Moyle, Palo Alto, and Richard S. Mann, Mountain View, both of Calif., assignors to Intersil Incorporated

Filed May 10, 1971, Ser. No. 141,793
Int. Cl. H05k *5/00*
U.S. Cl. 174—52 PE 10 Claims

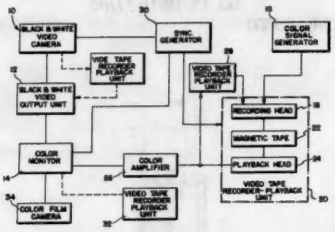


An improved semiconductor device package and process of manufacture incorporating an inner rigid glass structure including mounting pad and lead fingers and a surrounding plastic package through which leads extend.

3,706,841
METHOD AND APPARATUS FOR CONVERTING MONOCHROME PICTURES TO MULTI-COLOR PICTURES ELECTRONICALLY

Joseph F. Novak, 447 Ridge Court, Roselle, Ill.

Filed Sept. 17, 1971, Ser. No. 181,425
Int. Cl. H04n 9/02
U.S. Cl. 178—5.4 R **13 Claims**

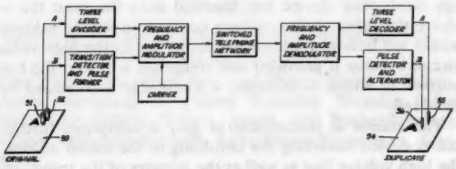


A method and apparatus for converting black and white or monochrome pictures to multi-color pictures electronically.

3,706,842
METHOD TO DOUBLE TRANSMISSION SPEED OF TELEPHONE NETWORK FACSIMILE

Gene D. Robertson, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Feb. 1, 1971, Ser. No. 111,376
Int. Cl. H04j 9/00; H04l 5/00; H04n 1/40
U.S. Cl. 178—6 **8 Claims**

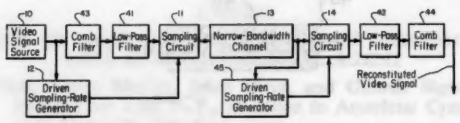


Material to be sent is scanned two lines at a time and the information in the two lines is transmitted simultaneously. The first line of each pair is encoded and transmitted by a frequency or phase modulated carrier. The second line of each pair is encoded and is used to amplitude modulate the frequency or phase modulated carrier of the first line.

3,706,843
NARROW-BANDWIDTH TELEVISION SYSTEM

Leonard J. Laub, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Oct. 29, 1969, Ser. No. 872,047
Int. Cl. H04n 7/12
U.S. Cl. 178—6.8 **1 Claim**

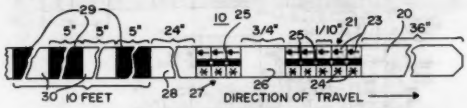


A television system for transmitting a video signal on a narrow-bandwidth bases. A driven sampling-rate generator is responsive to the video signal for developing a control signal having a frequency equal to a non-integral factor times the line rate of the video signal. A sampling circuit is responsive to the control signal for producing a narrow-bandwidth transmission signal. A second sampling circuit located at the receiver derives a representative video signal from the narrow-bandwidth signal and synchronizes the representative signal with the control signal.

3,706,844
FILM FORMAT AND STOP CIRCUIT FOR AN ELECTRONIC VIDEO RECORDING PLAYER

Emil E. Besier, Chicago, and Warren L. Knauer, Jr., Winnetka, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed March 15, 1971, Ser. No. 124,247
Int. Cl. H04n 5/84
U.S. Cl. 178—7.2 **10 Claims**

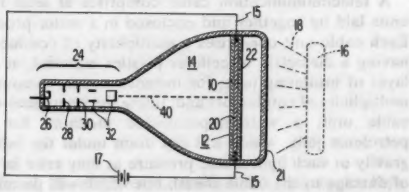


An electronic video recording player is disclosed for converting images on a film into a composite video signal for application to a television receiver to be reproduced therein. To prevent damage to the film cartridge by tearing the film loose from the cartridge when the end of the film is reached, the film is provided with a sequence of clear and opaque portions in the synchronizing signal track thereof. The player includes a timing circuit coupled with a light responsive resistor to operate a film device stop solenoid when the film end sequence is sensed. If an attempt is made to restart the forward drive of the film in any forward mode following an automatic stop at the end of the film, the sequence of opaque and clear portions at the end of the film causes reoperation of the stop solenoid. A time delay circuit operates to prevent false operation of the stop solenoid when the film leader is first threaded through the player. Clear portions also may be inserted in the synchronizing track of the film between different program materials on the film. These clear portions are long enough to cause energization of the stop solenoid when the player is being operated in a play mode but are too short to cause energization of the stop solenoid when the player is being operated in fast-forward mode of operation.

3,706,845
METHOD OF IMPROVING THE γ'OF A CATHODOCHROMIC DISPLAY DEVICE

Philip Michael Heyman, Trenton, and Istvan Gorog, Princeton, both of N.J., assignors to RCA Corporation

Filed Oct. 8, 1970, Ser. No. 79,037
Int. Cl. G02f 1/28
U.S. Cl. 178—7.5 D **8 Claims**



Operation of a cathodochromic display tube by steps including destabilizing the color centers for the optically reversible coloration component of the cathodochromic material. Such destabilizing excludes at least partially the optically reversible coloration components before the image-formation process.

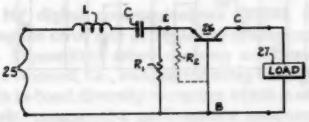
Destabilization can be achieved by heating the cathodochromic material to a temperature at least equal to the partial erase temperature but below the total erase temperature of the cathodochromic material, and/or by exposing the cathodochromic material material to radiation of suitable wavelength.

3,706,846

TELEVISION RECEIVER INTERMEDIATE FREQUENCY AMPLIFIER CIRCUITRY

Karol Siwko, Batavia, N.Y., assignor to GTE Sylvania Incorporated

Filed Dec. 7, 1970, Ser. No. 95,485
Int. Cl. H04n *5/48*
U.S. Cl. 178—7.3 R 13 Claims



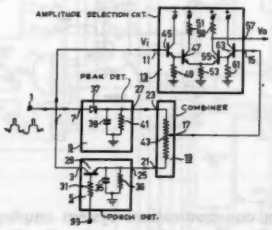
An intermediate frequency amplifier, utilizing a common base transistor amplifier, which changes the intermediate frequency response with gain to improve the weak signal (maximum gain) performance of a television receiver is disclosed. Series and/or parallel resonant circuits are damped by the input impedance of the transistor to increase or decrease the Q of the circuit response.

3,706,847

SLICING SYNCHRONIZING PULSE SEPARATOR CIRCUIT

Wouter Smeulers, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 17, 1970, Ser. No. 99,055
Claims priority, application Netherlands, Jan. 19, 1970, 7000743
Int. Cl. H04n *5/08*
U.S. Cl. 178—7.35 9 Claims



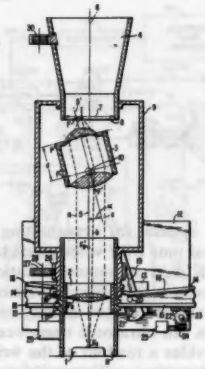
A synchronizing pulse separator circuit with which slicing of the separated synchronizing pulse relative to a fixed level between the peak level and black level is obtained by combining the reference level for the separator, preferably by averaging, from an optionally corrected level obtained by both peak level detection and by porch level detection.

3,706,848

OPTICAL SYSTEM FOR A CAMERA

Paul Rouet, Marcinelle, Belgium, assignor to Ateliers de Constructions Electriques de Charleroi (ACEC) Societe Anonyme, Charleroi, Belgium

Continuation-in-part of Ser. No. 680,912, Nov. 6, 1967, abandoned. This application March 5, 1971, Ser. No. 121,498
Int. Cl. G02b *13/06, 13/16*
U.S. Cl. 178—7.92 8 Claims



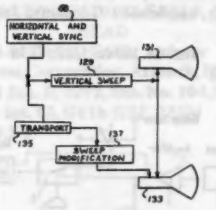
An optical system for a camera which comprises a front objective and a microscope assembly located behind the front objective. The said assembly comprises a microscope objective which is individually tiltable in order to increase the angular field of the optical system.

3,706,849

COLOR IMAGE DISPLAY SYSTEM EMPLOYING ALTERED SCANNING

Charles Bailey Neal, and Benton Boyd Scott, both of Batavia, N.Y., assignors to GTE Sylvania Incorporated

Filed Dec. 30, 1968, Ser. No. 787,725
Int. Cl. H04n *9/02*
U.S. Cl. 178—5.2 D 1 Claim

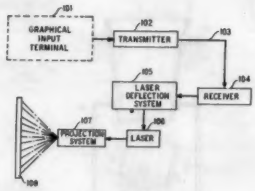


A system for providing a color image display derived from color television signals and photographic film includes a color image reproducer; first signal source means responsive to color television signal to provide signals representative of luminance, chrominance and synchronizing information; second signal source means including a flying spot scanner tube with two vertical deflection yokes to receive normal and correction scan signals, responsive to light-scanned photographic film to provide signals representative of luminance and chrominance information; transport means for effecting conveyance of a film through said second signal source means and synchronization of said film conveyance and said first signal source means; and switching means for selective coupling of signals representative of luminance and chrominance information from said first and second signal source means to said color image reproducer.

3,706,850
TELEWRITING SYSTEM

George Myles Cordell Fisher, Holmdel; Fritz Edgar Froehlich, New Shrewsbury; William Levin, Freehold; Colonel Blake McDowell, III, Holmdel, and Leonard Edward O'Boyle, New Shrewsbury, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed April 23, 1971, Ser. No. 136,736
Int. Cl. G08e 21/00
U.S. Cl. 178—18 9 Claims

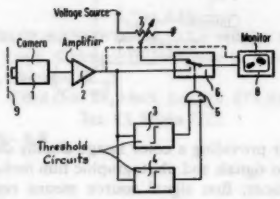


A telewriting system for transmitting handwriting and similar data in real time over voice grade telephone lines and reproducing such data at remote locations utilizes digital transmission to reduce the effects of transmission noise and signal distortion and to provide an easy means for control of remote apparatus. An ultrasonic transducer and microphone combination provides a readout of the writing head position with respect to a writing surface such as a blackboard. The readout signal is converted into digital form and transmitted to the remote locations where it is reconverted to analog form. The analog signal is used to control the deflection of an ultraviolet laser which reproduces the data on a photosensitive plate while the plate is simultaneously projected by visible light. The analog signal can also control other types of utilization apparatus.

3,706,851
MEANS FOR EVALUATING AND DISPLAYING CERTAIN IMAGE PORTIONS OCCURING WITHIN A TOTAL IMAGE

Walter Froehlich, 73 Karlsruhe, and Walter Lang, 708 Aalen, both of Germany, assignors to Carl Zeiss-Stiftung, Heidenheim on the Brenz, Wuerttembert and Siemens Aktiengeselischaft, Munich, Germany

Filed Jan. 15, 1971, Ser. No. 106,859
Claims priority, application Germany, Jan. 20, 1970, P 20 02 260.0
Int. Cl. H04n 5/22, 1/38
U.S. Cl. 178—6.8 13 Claims

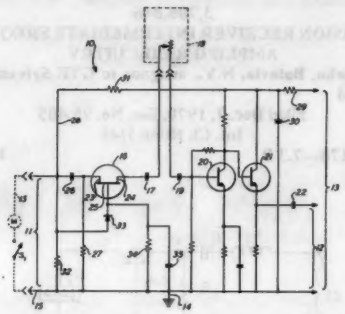


For TV monitor display of image portions of certain brightness or of certain dimensions as they may occur within a total image taken by a television camera, the invention contemplates feeding the video signal to an adjustable amplitude discriminator. The output signal of the amplitude discriminator is operative upon the video signals in such manner as to blank out or suppress that portion of the total image which is outside the determined image portions. The resulting signal is fed to the monitor. The monitor screen displays a total field, within which the determined image portions appear in correct gray value shading, while the rest of the image field appears in a constant gray value.

3,706,852
QUIET TURN-ON CIRCUIT FOR CARBON MICROPHONES

Alexander C. Angus, Bedford, N.H., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Jan. 4, 1971, Ser. No. 103,567
Int. Cl. H04b 1/04, 1/02; H03g 3/20
U.S. Cl. 179—1 A 4 Claims

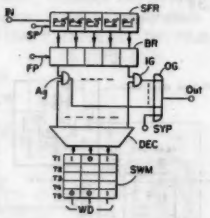


A preamplifier for a carbon microphone is provided at its input with a field effect transistor biased to a non-conductive state. When the microphone switch is turned on to connect the microphone to the amplifier the source of the bias is substantially cut off but an RC delay circuit is provided to maintain the bias momentarily to keep the amplifier inoperative until the rush of current through the microphone subsides so that the usual "click" sound is not heard when the microphone is turned on.

3,706,853
TIME DIVISION COMMUNICATION APPARATUS

Noriaki Saito, and Shinsuke Kadota, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Feb. 24, 1971, Ser. No. 118,323
Int. Cl. H04j 3/08
U.S. Cl. 179—15 AL 4 Claims



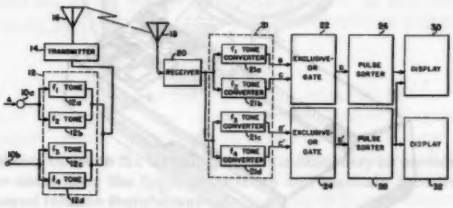
A time division communications system employs central control apparatus for effecting bilateral signaling for a plurality of cascaded system stations. Each station includes receiving and transmitting apparatus for receiving and inserting pulses occurring in a particular time interval of a composite pulse train sequence. The central control unit changes the relative position of the incoming and outgoing pulse digits to effect a desired communications interconnection pattern between the system stations.

3,706,854

PERFORMANCE MONITOR UNIT FOR FREQUENCY MULTIPLEXED HF MODEMS

Robert L. Dickson; George B. Johnson, both of San Diego, Calif., and Kirby W. Hansen, Jr., Springfield, Va., assignors to The United States of America as represented by the Secretary of the Navy

Filed Jan. 14, 1971, Ser. No. 106,522
Int. Cl. H04b 7/02; H04l 1/04
U.S. Cl. 179—15 BT 2 Claims



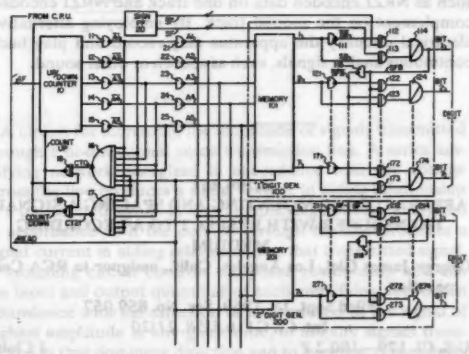
In an HF digital communications system, apparatus for monitoring the error rate of frequency multiplexed FSK transmissions. Transmitted tones carrying mark-space sequence signals are twinned, i.e., transmitted using frequency-diversity, to provide in-band diversity reception which is utilized to provide simple, comparative performance measurements of approximate bit error rates between the two twinned tones, or between two or more different twinned pairs of tones. At the receiving end of the system, each of the two frequency-diversity tones is separately demodulated by a different tone converter into a digital bit stream. The two resultant bit streams are then compared with respect to the transmitted mark-space sequence signals in a single-channel mode. The mark-space sequence signals are subtracted and counted in a pulse sorter which produces an output pulse whenever a difference greater than a selectively predetermined value arbitrarily defined as a bit error is detected. Twinned tones or systems are then compared by counting the number of pulses occurring during a predetermined time period.

3,706,855

GENERATOR FOR DIGITAL PULSE SIGNALS REPRESENTATIVE OF ANALOG SIGNAL PAIRS

Satyan G. Pitroda, Villa Park, Ill., and Bernard J. Rekiere, Addison, Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 2, 1970, Ser. No. 77,487
Int. Cl. H04g 3/12
U.S. Cl. 179—18 ES 3 Claims



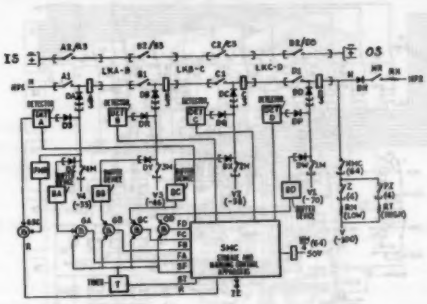
A technique of multifrequency pulsing consisting of transmitting a digitally valid number over pulse code modulated carrier from a time division multiplex office. The signals generated thereby after passing through a conventional carrier channel bank would be accepted by conventional analog multifrequency receivers as utilized in the telephone industry.

3,706,856

MEANS FOR SUPERVISION OF THE CONTROL OF TELECOMMUNICATIONS SWITCHING NETWORKS

Brian Grundy, Ashton-In-Makerfield, and Peter Samuel Hampson, Leigh, both of England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland

Filed March 31, 1971, Ser. No. 129,903
Claims priority, application Great Britain, April 8, 1970, 16,629/70
Int. Cl. H04q 3/52
U.S. Cl. 179—18 GE 3 Claims



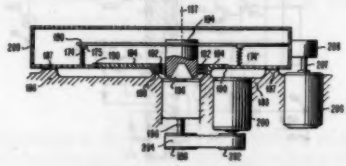
A switching network formed by a succession of link-connected stages of crosspoint matrix switches A, B, C and D and having marking means, for marking salient points of any connection required to be established over the network, in which the control equipment includes or has associated with it a separate detecting means for each stage of the network and each of these detecting means is connected to all marking conductors from which marking diodes of all inlets of matrix switches of the particular stage are branched and in which the marking means appropriate to a required inlet of a matrix switch of that stage is only rendered operative as a result of said detecting means responding to a valid signal emanating over particular ones of the marking diodes and resulting solely from the application of a significant source of potential to the marking/holding conductor of the matrix switch outlet to which said inlet is required to be connected.

3,706,857

DISK CARTRIDGE WITH ROTATABLY ADJUSTABLE HEAD

John J. Lynott, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 5, 1971, Ser. No. 104,107
Int. Cl. G11b 5/52, 23/04
U.S. Cl. 179—100.2 T 11 Claims

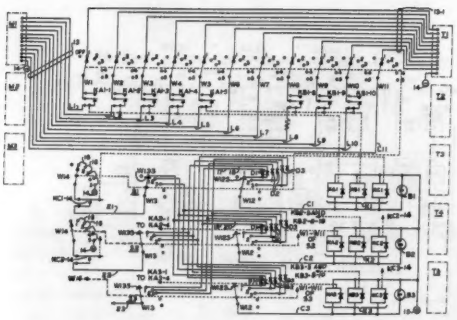


A sealed cartridge, low cost disk memory system wherein the disk and the head rotate in parallel planes about offset axes. The disk contains a data band between first and second radii and is rotated about the first axis. The head is mounted for rotation about an axis which is offset from said first axis by at least one half the width of the data band, and less than the width of the data band.

3,706,858
SUPERVISORY CONTROL SYSTEM FOR SELECTIVELY CONNECTING RECORDERS AND TRANSCRIBING STATIONS

John C. Keitel, Iselin, N.J., assignor to McGraw-Edison Company, Elgin, Ill.

Filed April 14, 1971, Ser. No. 133,842
Int. Cl. H04m 11/10
U.S. Cl. 179—100.1 DR 5 Claims

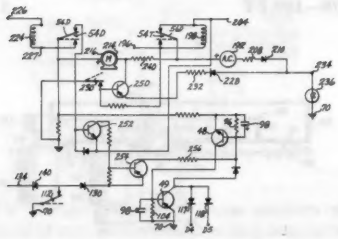


A supervisory control system is provided for selectively connecting any one of a plurality of endless tape recorder-reproducers to any one of a plurality of remote transcribing stations by simply turning respective selector switches for the recorder-reproducers to the desired stations. A relay control circuit is provided for each switch which cuts out the inter-station circuits automatically of a recorder-reproducer when the respective switch is moved to an active transcribing station already connected to another recorder-reproducer.

3,706,859
UNIDIRECTIONAL TAPE MOTION DETECTION APPARATUS AND AUTOMATIC TAPE RETURN

William M. Nye, Bellevue, Wash., assignor to Lanier Electronics Laboratory, Inc., Atlanta, Ga.

Filed Sept. 26, 1969, Ser. No. 861,304
Int. Cl. G11b 15/10, 15/20, 27/20
U.S. Cl. 179—100.2 R 5 Claims

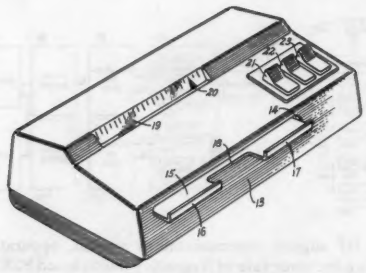


In dictation systems in which magnetic tape is stored in bins, unidirectional tape motion switches and related control and monitor circuits are provided to automatically return previously reversed but unlistened tape to the place where the dictation was terminated. Also provided are unidirectional switches and circuitry to determine the accumulative length of tape transcribed and/or dictated and awaiting transcription.

3,706,860
MAGNETIC CARD DATA RECORDER/REPRODUCER

John Emerson Burbank, III, Ridgefield, Conn., assignor to Wiltek, Inc., Wilton, Conn.

Filed Aug. 20, 1970, Ser. No. 65,631
Int. Cl. G11b 15/26, 25/04
U.S. Cl. 179—100.2 CA 5 Claims



A compact desk top recorder-reproducer apparatus is disclosed employing a card coated with magnetic oxide as the record medium. In the recording mode the record card is moved in a first linear direction with respect to a stationary magnetic recording head to record a line of incoming signals. Upon completing each line of recording the record card is rapidly moved in the opposite direction to its starting position while the recording head is stepped a discrete distance normal to direction of card traverse, and successive parallel tracks of data are recorded. Typically the device requires an electronic input register or character buffer to store one line or block of incoming data at a first reception rate and deliver such data to the recording transducer at a rate compatible with the motions of the recording apparatus. In the read mode the same relative motions are performed, with the magnetic transducer serving to detect and playback the previously recorded data. This data is first stored in the electronic registers and then delivered to other devices at a different speed. Anti-backlash means in combination with a transducer advancing mechanism provides precise positioning of closely spaced record tracks, while automatic card centering means and rapid reverse drive means assure maximum density data packing and high speed recording and read-out operation. In the preferred embodiment a dual track transducer head provides for either clock pulses on tracks parallel to data pulses or self synchronizing methods such as NRZI encoded data on one track and NRZI encoded complement on the second track. By employing alternative electrical circuitry the apparatus may record and play back continuous analog signals, such as speech or other sound.

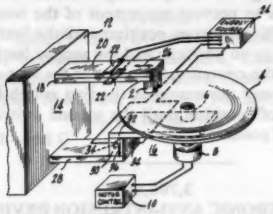
3,706,861
APPARATUS FOR MOUNTING AND SPACING A SIGNAL TRANSDUCER WITH RESPECT TO A RECORDING MEDIUM

George James Giel, Los Angeles, Calif., assignor to RCA Corporation

Filed Sept. 18, 1969, Ser. No. 859,057
Int. Cl. G11b 5/58, 21/20
U.S. Cl. 179—100.2 P 1 Claim

A device for supporting and controlling the position of a signal transducer with respect to a recording medium. A body of material which exhibits dimensional change in the presence of an electric or magnetic field applied to the material, is utilized as part of the support structure for the transducer and/or the recording medium. The value of the field applied to the

material determines the relative spacing of the transducer and recording medium. Servo means, responsive to the relative



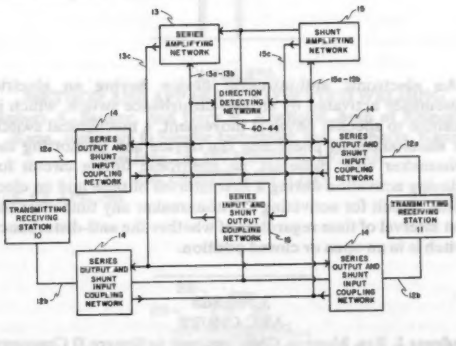
spacing between the transducer and medium, may be provided for controlling the field, to establish and maintain a desired spaced relation therebetween.

3,706,862

AMPLIFIER CIRCUIT FOR TRANSMISSION LINES

Charles W. Chambers, Jr., Amherst, Ohio, assignor to Lorain Products Corporation

Filed June 28, 1971, Ser. No. 157,471
Int. Cl. H04b *3/36*
U.S. Cl. 179—170 T **24 Claims**


SERIES AMPLIFYING NETWORK
SHUNT AMPLIFYING NETWORK
DIRECTION DETECTING NETWORK
SERIES OUTPUT AND SHUNT INPUT COUPLING NETWORK
SERIES OUTPUT AND SHUNT INPUT COUPLING NETWORK
SERIES INPUT AND SHUNT OUTPUT COUPLING NETWORK
SERIES OUTPUT AND SHUNT INPUT COUPLING NETWORK
SERIES OUTPUT AND SHUNT INPUT COUPLING NETWORK
TRANSMITTING RECEIVING STATION 10
TRANSMITTING RECEIVING STATION 11

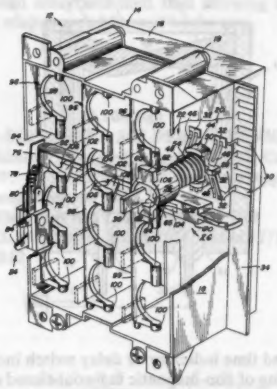
A circuit for increasing the amplitude of signals transmitted through a bi-directional voice transmission line. A series amplifying network energized in accordance with the voltage across the line produces a signal voltage in aiding relationship to a transmitted signal. A shunt amplifying network energized in accordance with the current through the line produces a signal current in aiding relationship to that transmitted signal. A switching circuit controls the phase relationship between the input and output quantities of each amplifying network in accordance with the direction of transmission of the signal of highest amplitude at any given time, to amplify signals transmitted in that dominant direction and to suppress echo signals transmitted in the other or non-dominant direction. Circuitry is provided to vary the amplitudes of the input signals to the series and shunt amplifying networks as a function of the impedance of the line to provide stable amplification and fidelity of reproduced signal over a wide range of frequencies and transmission line impedances.

3,706,863

MULTIPLE SWITCH ASSEMBLY FOR VENDING MACHINE SELECTING APPARATUS WITH IMPROVED MASTER SWITCH CONTROL

Leon R. Britton, Chicago, and Joseph K. Semerjian, Franklin Park, both of Ill., assignors to The Seeburg Corporation, Chicago, Ill.

Filed Sept. 11, 1970, Ser. No. 71,620
Int. Cl. H01h *9/20*
U.S. Cl. 200—5 R **17 Claims**



A selecting apparatus includes a plurality of selector input switches, each of which is representative of a character utilized to identify selections in a vending machine and each of which is individually actuatable by an associated actuator. Additional input switches are provided for supplemental switching functions. The actuators are adapted for displacement beyond the contact mating position in order to close a common master switch, which controls energization of the circuits containing the selector input switches, after the input switch has been closed. Each input switch actuator has a spring-biased contact holder and is assembled by utilizing a restraining collar with a latching member to position the spring.

3,706,864

DEPTH SENSING SWITCH WITH TUBULAR HOUSING HAVING A DIAPHRAGM ENCOMPASSING A PORTION OF SAID HOUSING

Ralph S. Gamble, Chester, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

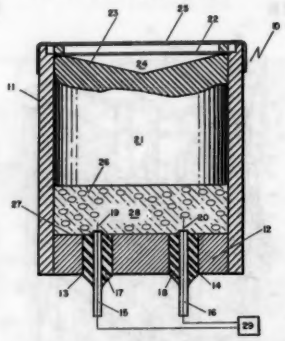
Filed June 15, 1971, Ser. No. 153,269
Int. Cl. H01h *35/34*
U.S. Cl. 200—83 B **5 Claims**

A depth sensing device has an extensible resilient switch contact, contraposed behind a diaphragm, said contact having the form of a helical spring with both ends fixed and having its axis parallel to the surface of the diaphragm; said contact further flexes inwardly and establishes contact with a fixed contact when liquid pressure deflects the diaphragm. The diaphragm is formed by a flexible sheath that encompasses a portion of the tubular housing that houses the switch contacts, thereby sealing the contacts from the environment.

3,706,865
ELAPSED TIME INDICATOR

Frank K. Porter, Jr., Billerica, and Boris Sonjara, Sudbury, both of Mass., assignors to The United States of America as represented by the Secretary of the Army

Filed Dec. 7, 1971, Ser. No. 205,586
Int. Cl. H01h 35/34
U.S. Cl. 200—83 T 7 Claims

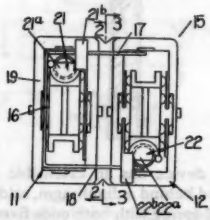


An elapsed time indicator or delay switch including a cylindrical housing of non-magnetic material closed at one end by a base of magnetic material. A pair of spaced apart electrically conducting terminals insulated from and extending into and through the base. A permanent magnetic piston slidably positioned within the housing, spaced from said base and having a viscous fluid therebetween. A pressure releasable piston retainer disposed above the piston for limiting the movement thereof and a flexible deformable diaphragm, proximate the retainer, closing the opposite end of the housing. The device is initiated upon pressure being applied to the diaphragm which thereupon deflects the retainer and releases the piston that in turn is attracted toward the base and moves theretoward at a rate dependent, among other factors, on the fluid viscosity, the magnetic force, initial spacing and the clearances between the housing and the piston. Piston travel terminates upon contact with the inner terminals and electrical shorting thereof which may be used to indicate the end of the elapsed period.

3,706,866
ROCKER SWITCH INTERLOCK WITH SPRING LATCH MEMBER

David Foley, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Feb. 23, 1971, Ser. No. 117,980
Claims priority, application Great Britain, Feb. 28, 1970, 9796
Int. Cl. H01h 9/26
U.S. Cl. 200—50 C 2 Claims

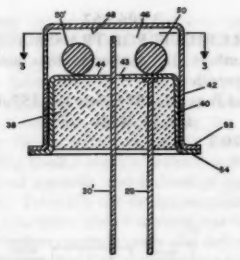


A rocker switch assembly includes first and second rocker switches positioned side-by-side, with the pivot axis of the operating member of the first switch aligned with the pivot axis of the operating member of the second switch. A U-shaped resilient member is carried by the switches with the parallel limbs of the U-shaped member extending parallel to and on opposite sides respectively of the pivot axis of the operating members of the switches. The limbs of the resilient member constitute first and second latch pieces, the first latch piece co-operating with the operating members of the first and second switches to prevent movement of the second switch from an off position to an on position until the first switch has been moved to an on position, and the second latch piece co-operating with the operating members of the first and second switches to prevent movement of the first switch from an on position to an off position until the second switch has been moved to an off position.

3,706,867
ELECTRONIC ANTI-INTRUSION DEVICE

Henry T. Rand; Maxine Bohacz, both of Denville, N.J.; Jerry Lyon, Stanhope, N.J.; Robert L. Pitman, Wayne, N.J.; Donald N. Shaw, Mt. Lakes, N.J., and John Bianchi, Newark, N.J., assignors to the United States of America as represented by the Secretary of the Army

Filed Feb. 18, 1971, Ser. No. 116,362
Int. Cl. H01h 35/02, 35/14
U.S. Cl. 200—61.52 1 Claim

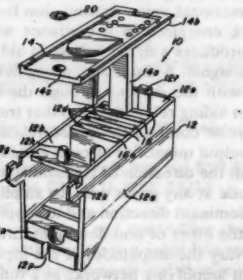


An electronic anti-intrusion device having an electric noisemaker activated by an anti-disturbance switch, which is sensitive to specific physical movement, a mechanical switch for simultaneously energizing the device and unshorting the noisemaker after dispersal, an electronic timing circuit for delaying activation during a first interval of time and an electronic circuit for activating the noisemaker any time after the first interval of time regardless of whether the anti-disturbance switch is in an open or closed position.

3,706,868
ARC CHUTE

Tadeusz J. Rys, Monroe, Ohio, assignor to Square D Company, Park Ridge, Ill.

Filed Oct. 18, 1971, Ser. No. 189,947
Int. Cl. H01h 33/08
U.S. Cl. 200—144 R 6 Claims



The arc chute includes a plurality of metal arc-splitting plates and a two-part casing formed of dielectric material and

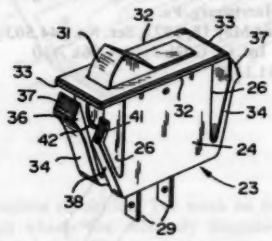
assembled with a single push-type fastener. A top portion of the casing includes a shielding and retaining portion for the metal arc-splitting plate closest to the origin of an arc.

3,706,869

MULTIPLE WING SWITCH CASE

Richard W. Sorenson, West Hartford, Conn., assignor to Carling Electric, Inc., West Hartford, Conn.

Filed March 24, 1972, Ser. No. 237,725
Int. Cl. H01h 9/08
U.S. Cl. 200—168 C 9 Claims



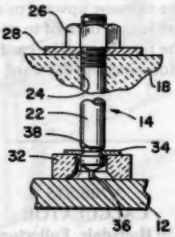
An electrical switch case, on each opposite end of which is located a set of resilient wings of different dimensions and positioned at different angles, said wings individually and selectively operating in conjunction with a flange on said case to removably secure the latter upon mounting plates of different ranges of thickness.

3,706,870

METHOD AND APPARATUS FOR STUD WELDING

Robert A. Sauder, and Gary R. Kendrick, both of Emporia, Kans., assignors to Sauder Industries, Inc., Emporia, Kans.

Filed June 28, 1971, Ser. No. 157,432
Int. Cl. B23k 9/20, 11/14
U.S. Cl. 219—98 5 Claims



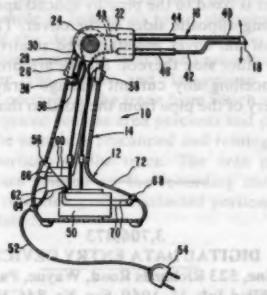
Method and apparatus for stud welding which includes an electrically conductive metallic stud having a head at one end thereof and a stud tip of reduced diameter at the other end. The stud is positioned against a metallic object to which the stud is to be welded by contacting the tip of reduced cross section directly against the metallic object. A circular ceramic arc shield surrounds the tip of the stud. Immediately above the arc shield, the stud shank is provided with a peripheral groove and a fusible retaining ring is mounted on the stud with a plurality of inwardly directed fingers on the retaining ring being received in the groove. A stud gun is placed against the head of the stud and a manual force is applied in the direction of the metallic object, and, simultaneously, a current of predetermined duration is passed through the stud and into the metallic object. The stud tip, because of its relatively small cross section, burns away and starts an arc. The stud itself does not move at this time because the retaining ring, resting against the arc shield, prevents movement of the stud towards the metallic object. However, as the current continues for a brief period of time and the heat increases, the fingers of the retaining ring will burn away and melt thus allowing the stud to plunge into the molten metal formed by the arc.

3,706,871

SELF-SUPPORTED SOLDERING DEVICE

William W. Witherow, deceased, late of San Jose, Calif., and by Susan M. W. Rosenburg, legal representative, 3183 El Capitan Avenue, Merced, Calif.

Filed May 8, 1970, Ser. No. 35,780
Int. Cl. H05b 3/02; B23k 3/04; F16m 11/10
U.S. Cl. 219—242 3 Claims



A soldering device having means for permitting it to be supported on a surface to allow the user to hold workpieces in both hands adjacent to the soldering tip of the device. The device is free-standing and has means for pivotally mounting the soldering unit on the upper end of an inclined extension secured to and extending upwardly from a hollow base. The soldering unit is pivotable on the extension into any one of a number of operating positions with respect to the surface on which the base is supported. Means is provided to releasably hold the soldering unit in a fixed position on the extension in any of such operating positions. Switch means on the extension permits the soldering unit to be used while being supported on a surface or when hand-held.

3,706,872

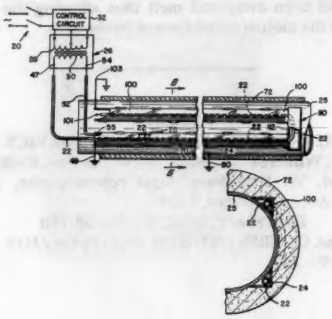
SYSTEM FOR ELECTRICALLY HEATING FLUID-CONVEYING PIPE LINES AND OTHER STRUCTURES

William J. Trabilcy, 280 Prospect Ave., Hackensack, N.J.

Filed May 15, 1970, Ser. No. 37,768
Int. Cl. H05b 3/00; F24j 3/04
U.S. Cl. 219—300 5 Claims

A heating system for electrically heating an electrically conductive fluid-transportation pipe or other electrically conductive structure by positioning an electrically conductive cover or shroud on the pipe to cover a peripheral portion of the pipe and an electrical conductor extending along the periphery of the pipe so as to complete a magnetic field path through the

covered, peripheral pipe portion. The cover and the conductor are serially connected in a load circuit across an A.C. power supply source that alternating current flowing in the pipe and the cover is concentrated at and thereby substantially confined to the covered peripheral pipe portion and the inner surface of the cover as a result of the magnetic field that is produced by alternating current flowing through the conductor. The cover is fixed to the pipe by spaced apart stitch welds extending along opposite sides of the cover. The stitch welds on one side of the cover are staggered relative to the stitch welds on the other side thereof. Means are provided for substantially cancelling any current leakage straying along the outer periphery of the pipe from the portion that is covered by the cover.



3,706,873

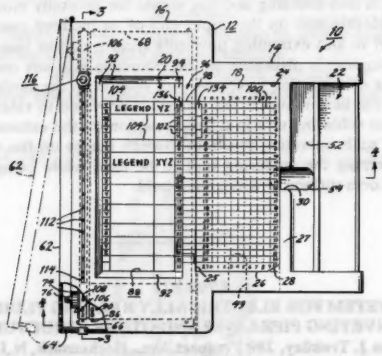
DIGITAL DATA ENTRY DEVICE

John H. Nodine, 523 Richards Road, Wayne, Pa.

Filed July 31, 1969, Ser. No. 846,383

Int. Cl. B26d *7/28;* **G06k** *1/06, 1/14*

U.S. Cl. 235—61.1 **3 Claims**



Format charts are used to direct the manual entry of digital data into record cards such as sense-mark cards that are processed in an automatic data processor. The format charts have parallel indexing lines that define different combinations of the sense-mark data columns, as well as means for identifying the class of data to be entered in each of the combinations of columns. The charts are linked as a string of sequential charts, and a mechanism is provided for moving the format charts and positioning them one at a time with their indexing means adjacent to and in parallel relation to the columns of the sense-mark cards, so that the various combinations of columns are visually related to the format identifications of data classes and data may be manually entered in a sequence of the cards.

3,706,874

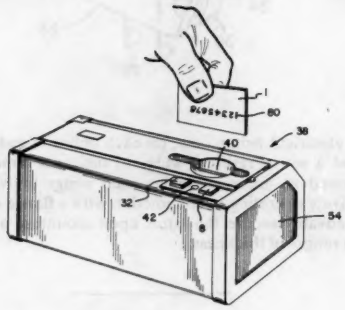
EMBOSSED CARD READER

Joseph Larue Lockard, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 18, 1971, Ser. No. 144,503

Int. Cl. G02b *5/14;* **G06k** *7/10*

U.S. Cl. 235—61.11 E **4 Claims**



The disclosure relates to a card reader for reading embossed indicia cards utilizing an optical scanner of the embossing which scans various parts of the indicia by means of reflection of light therefrom, reflection being dependent upon whether or not an embossment appears at that point. Fiber optic devices are utilized to conduct the optical scanning. The card is accurately located in the card carriage by means of a knife edge which abuts the extreme upward or downward row of indicia along the entire length thereof to accurately position the indicia relative to the read head. The card reader also includes an ejector device for ejecting the card after a reading has beem completed.

3,706,875

CALCULATOR

William Kasner, 1330 Hollydale, Fullerton, Calif.

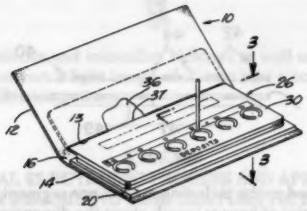
Filed Dec. 2, 1970, Ser. No. 94,222

Int. Cl. G06c *27/00*

U.S. Cl. 235—74 **9 Claims**

A calculator of the type having digit or counter wheels which can be manually actuated for addition and subtraction. The calculator is in a relatively thin case or housing with opposite sides so constructed that access can be had to the digit or counter wheels from either side of the housing to actuate them with a stylus. The counter is hinged within a check book so that it can be readily moved to expose either side for making calculations. A digit or number is put in as an input by rotating any digit wheel with a stylus. Thus, a movement by the stylus on one side causes the machine to add and the same type or kind of movement on the opposite side causes the

machine to subtract, the digit wheel being rotated in the opposite direction. The transfer means between digit wheels comprises idler wheels. Each idler wheel meshes with a digit wheel that is driven by it. Each idler wheel is driven by a digit wheel; each digit wheel has a single tooth positioned to effect the one-step transfer to an idler wheel when the digit wheel



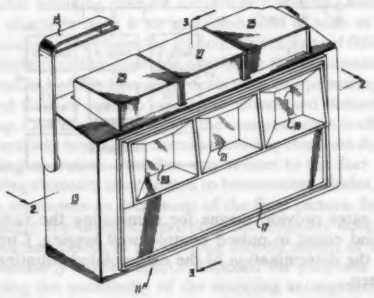
makes a complete revolution. The teeth on the idler wheels and the digit wheels are relatively displaced axially with respect to their hubs, alternate digit wheels and idler wheels being inverted to permit closer spacing with each idler wheel driving the next digit wheel but not meshing with the preceding digit wheel.

3,706,876

EDUCATIONAL TOY ADDING MACHINE

Michael Langieri, Jr., Butler, N.J., and Lennox Watts, Bronx, N.Y., assignors to Questor Corporation, Toledo, Ohio

Filed Jan. 31, 1972, Ser. No. 221,936
Int. Cl. G06c *27/00*
U.S. Cl. 235—74 **4 Claims**



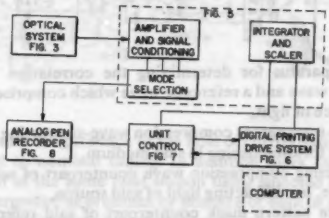
An educational toy adding machine having a plurality of rotatable discs with indicia on one face thereof viewable through windows in the housing of the machine. Driver discs coaxially mounted and rotatable with the viewed discs have pins extending outwardly from the face thereof. A driving spindle is biased upwardly above the pins on the driven discs. A large key extends through said housing and contacts the upper end of the spindle. The upper surface of the spindle in inclined so that depression of the key moves the spindle downwardly and laterally so as to contact said pins.

3,706,877

DENSITOMETER HAVING AN ANALOG COMPUTER FOR CALCULATING A FRACTION OF THE TOTAL AREA UNDER A CURVE

George F. Clifford, Jr., and Robert C. Woodward, both of Natick, Mass., assignors to Clifford Instruments, Inc., Natick, Mass.

Continuation of Ser. No. 27,067, April 9, 1970. This application Jan. 18, 1971, Ser. No. 107,140
Int. Cl. G01d *1/04*
U.S. Cl. 235—151.35 **27 Claims**



A densitometer which provides complete electrophoresis results on a single sheet. An electrophoresis sample is scanned by a beam of light energy. The light energy transmitted through the sample is converted to an electrical signal. An analog trace of the density profile is made on a recording chart. At the same time, the total area under the curve is integrated. After the trace and integration have been completed, the portions of the trace from which additional information is required such as area percents and protein levels are marked. The sample is rescanned and reintegrated within the selected portions of the trace. The area percents and protein levels are printed on the recording chart in digital form when the rescanning of the selected portion of the trace has been completed.

3,706,878

EXCESS 3 TO BCD CODE CONVERTER

Wayne Spani, San Diego, Calif., assignor to Eastman Kodak, Rochester, N.Y.

Filed March 16, 1971, Ser. No. 124,684
Int. Cl. H04l *3/00*
U.S. Cl. 235—155 **6 Claims**

An excess 3 to binary coded decimal converter is described which includes a plurality of EXCLUSIVE-OR gates and means for coupling the EXCLUSIVE-OR gates so that in response to excess 3 coded input signals, the EXCLUSIVE-OR gates provide binary coded decimal output signals.

3,706,879

Patent Not Issued For This Number

3,706,880

BCD TO EXCESS 3 CODE CONVERTER

Wayne Spani, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

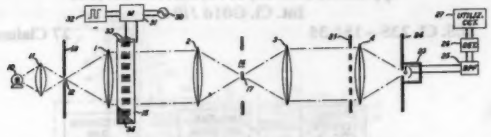
Filed March 16, 1971, Ser. No. 124,683
Int. Cl. H04l *3/00*
U.S. Cl. 235—155 **6 Claims**

A binary coded decimal to excess 3 code converter is described which includes a plurality of EXCLUSIVE-OR gates and means for coupling the EXCLUSIVE-OR gates so that in response to BCD input signals the EXCLUSIVE-OR gates provide excess 3 coded output signals.

3,706,881
OPTICAL WAVE CORRELATION

MacLellan Emshwiller, Orange, N.J., assignor to Bell Telephone Laboratories, Incorporated, New York, N.Y.

Filed March 27, 1962, Ser. No. 182,758
Int. Cl. G06g 7/19
U.S. Cl. 235—181 11 Claims



1. Apparatus for determining the correlation between a message wave and a reference wave which comprises

a source of light,

a light-transparent compression wave-supporting medium,

means for establishing in said medium,

a traveling compression wave counterpart of said message wave, for diffracting light of said source,

a space pattern mask counterpart of said reference wave disposed beyond said medium,

a light-responsive device disposed beyond said mask,

optical means for projecting the light of said source as a beam through said medium and said mask and onto said light-responsive device,

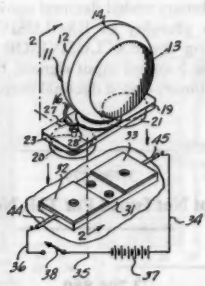
and a partially transparent phase-retarding member disposed between said medium and said mask and in the path of said beam,

said member being dimensioned to intercept and partially transmit only the undeflected light of said beam but to leave unaffected light that has been diffracted by localized nonuniformities of density of said medium due to traveling compression waves therein, whereby all of said diffracted light passes around said member.

3,706,882
EMERGENCY SIGNAL LIGHT WITH MAGNETIC CONTACTS

George W. Eby, 1614 Pierce Street, Oregon City, Oreg.

Filed Feb. 23, 1971, Ser. No. 117,969
Int. Cl. B60q 1/24; H01r 11/30, 33/00
U.S. Cl. 240—7.1 R 2 Claims



An auto lamp assembly having a base of insulating material to the bottom of which is attached a pair of spaced permanent magnets wired to the respective terminals of the associated lamp. The magnets are used as contacts engagable with spaced contact plates of magnetic material insulatingly mounted on a portion of an automobile and connected to the automobile battery, so that the lamp can become energized when the magnets engage the contact plates and also be supported by the magnets.

3,706,883
RADIOLOGICAL APPARATUS FOR MEASURING LENGTH WHICH COMPRISES TWO RELATIVELY MOVABLE RADIO OPAQUE MARKS

Kevin M. McIntyre, V. A. Hospital, 1400 V.F.W. Parkway, Boston, Mass.

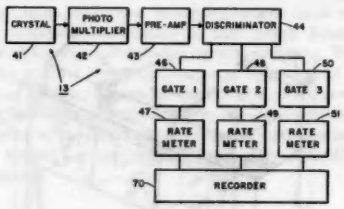
Filed Nov. 21, 1969, Ser. No. 878,761
Int. Cl. G03b 41/16; G01b 15/00
U.S. Cl. 250—59 8 Claims

An elongated probe including at least one segment of X-ray-opaque material of known length along the dimension parallel to the axis of the probe is used to provide a standard scale for dimensional determination of objects not accessible to direct measurement. The probe is brought into proximity to the object to be measured, X-rays illuminate the object and probe to produce an image, and the image size of the X-ray-opaque material, or of known intervals between adjacent X-ray-opaque segments, is compared with the image size of the object to be measured.

3,706,884
PULSED NEUTRON WELL LOGGING APPARATUS HAVING FOR DETERMING BACKGROUND RADIATION

Arthur H. Youmans, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 30, 1967, Ser. No. 650,442
Int. Cl. G01v 5/00
U.S. Cl. 250—83.3 R 5 Claims



Three gates provide means for eliminating the radiation background count in pulsed neutron well logging. Circuitry provides the determination of the extrapolated counting rate at time zero.

3,706,885
PHOTOCATHODE-PHOSPHOR IMAGING SYSTEM FOR X-RAY CAMERA TUBES

Karoly G. Fister, and Martin D. Gibbons, both of Camillus, N.Y., assignors to General Electric Company

Filed Jan. 29, 1971, Ser. No. 111,045
Int. Cl. G01t 1/16; H01j 39/00
U.S. Cl. 250—83.3 R 4 Claims

An improved system for emission of electrons in response to x-rays comprises a phosphor layer separated from a photocathode layer by a light transparent barrier layer which protects the phosphors and the binders in the phosphor layer

from attack by the chemicals in the photocathode layer. The system is useful in various types of camera tubes including

image orthicons and intensifier vidicons as well as direct view tubes to convert a light image of X-rays into a corresponding electron emission pattern.

3,706,886

OPTICAL ELECTRONIC PROCESS AND APPARATUS FOR RECORDING TEMPERATURE PICTURES

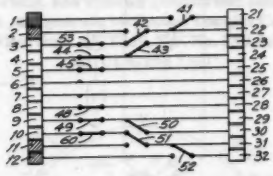
Hans Siebecker, 6906 Leimen; Gunter Wichmann, 69 Heidelberg, and Georg Kurotschka, 75 Karlsruhe, all of Germany, assignors to Eltro GmbH & Company, Heidelberg, Germany

Filed Dec. 2, 1968, Ser. No. 781,304

Claims priority, application Germany, Dec. 1, 1967, P 16 23 426.7

Int. Cl. G01t *1/16*

U.S. Cl. 250—83.3 HP **10 Claims**



A technique is provided for recording temperature or thermal pictures by optically scanning a thermally characterized scene in stripwise manner to produce electrical signals which are converted into visible strips which are juxtaposed to give a visible image. The scanning is effected by the use of a displaceable scanning element located at a scanning station as a result of which there is an increased field of scan as the element scans further from the station. The increased field results in distortion and undesirable overlap in the juxtaposed strips. The method of the invention deals with compensating the increased field of scan to avoid the aforenoted distortion and overlap. One manner by which the compensation is effected is by selectively turning off certain receiving elements during the scanning operation. Another way relates to the fact that the receiving elements are coupled to luminescent diodes, each of which represents an increment of the final picture. In this arrangement the invention provides for uniquely coupling the luminescent diodes to a recording film by means of fiber optics peculiarly shaped and/or disposed for purposes of compensating the peculiarity of the scanning arrangement noted above.

3,706,887

OPTICAL CARD READER

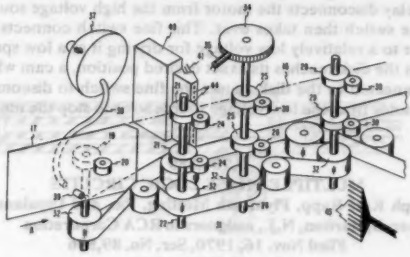
Jerome R. Bickford, and James O. Nicholson, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed March 4, 1971, Ser. No. 120,949

Int. Cl. G08c *9/06*

U.S. Cl. 250—219 DC **9 Claims**

The optical reader of the invention uses a discrete number of pulses to time the passage of each column position, samples hole data at four selected count positions and interrogates the samples to ascertain whether the condition of the samples indicates the presence or absence of data or an error condition. When valid data is sensed by data indications adjacent one end of the sample sequence, the interpreting circuit also indicates whether the presence of the hole occurred early or late with respect to nominal timing. In addition mark read data may be read at the same read station using selected samples that are interpreted as presence or absence of data or an error condition using the same interpreting circuitry.



3,706,888

POSITIONING DEVICE FOR THE RADIATION ABSORBER OF THICKNESS MEASURING DEVICES

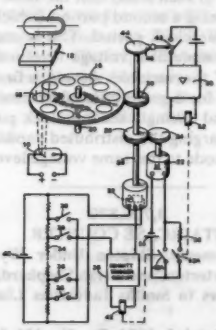
Bruno Wunsch, New York, N.Y., assignor to Exatest Messtechnik GmbH, Leverkusen, Germany

Filed Sept. 28, 1970, Ser. No. 75,929

Claims priority, application Germany, Oct. 1, 1969, P 19 49 558.0

Int. Cl. G01n *23/16*

U.S. Cl. 250—83.3 D **7 Claims**



A radiation-type thickness measuring device has a radiation source for irradiating the object whose thickness is to be measured and a radiation detector for detecting the radiation transmitted by the object. A radiation absorber sheet is introduced into the radiation path, this sheet being of the appropriate thickness, according to the thickness of the object to be measured, to standardize the amount of radiation reaching the detector. Sheets of various thicknesses are carried circumferentially by a disk and the disk must be positioned accurately so that the correct sheet lies precisely where it should in the radiation beam. A positioning device is provided for the disk, having a bridge circuit of which two branches are formed by a potentiometer whose sliding tap is connected to the disk so that its position is dependent on the real position of the disk. The other two branches of the bridge are formed by a resistance chain whose intermediate tap can be selected in accordance with the desired position of the disk. A threshold switch in the form of a Schmitt trigger is controlled by the

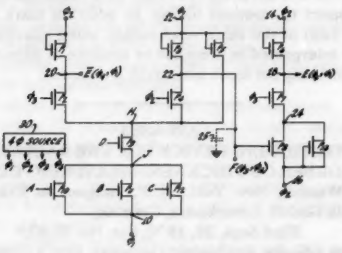
diagonal voltage of the bridge and controls a relay. When the diagonal voltage exceeds the threshold of the Schmitt trigger the relay connects the drive motor of the disk to a relatively high voltage source to operate the motor at a relatively high speed in the direction which reduces this diagonal voltage. When the bridge diagonal voltage falls within the threshold, the relay disconnects the motor from the high voltage source. A fine switch then takes over. This fine switch connects the motor to a relatively low voltage for driving it at a low speed. When the disk reaches its exact desired position, a cam which is connected to the disk causes the fine switch to disconnect the motor from the low voltage source so as to stop the motor.

3,706,889

MULTIPLE-PHASE LOGIC CIRCUITS

Adolph Karl Rapp, Plymouth Meeting, Pa., and Utpalananda Bharali, Raritan, N.J., assignors to RCA Corporation

Filed Nov. 16, 1970, Ser. No. 89,596
Int. Cl. H03k *19/08*
U.S. Cl. 307—205 **8 Claims**



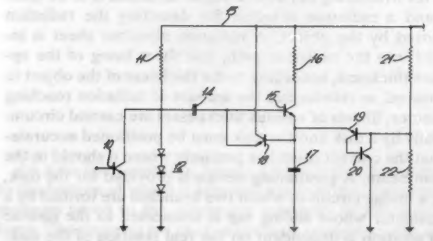
A multiple-phase field-effect transistor logic circuit of the type normally capable of indicating the logic function of a plurality of variables during only a single portion of a clock pulse period is controlled in such a way that the same logic function is also produced during a second portion (which may overlap the first) of the same clock period. This is accomplished by placing one circuit node at a voltage level indicative of the desired function of the variables during a first clock pulse, storing this voltage for a given interval of time following the first clock pulse, and during a second clock pulse within this interval of time, charging the distributed capacitance present at a second circuit node to this same voltage level.

3,706,890

STAIRCASE COUNTER

John Anthony Clements, Shipton Under Wychwood; Alan Patrick Goss, Carterton, and Brian Shepherd, Witney, all of England, assignors to Smiths Industries Limited, London, England

Filed March 5, 1971, Ser. No. 121,334
Int. Cl. H03k *25/04*
U.S. Cl. 307—225 **6 Claims**



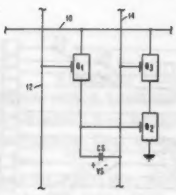
An electrical dividing circuit in which an input circuit including an input capacitor supplies pulses of predetermined voltage amplitude to the input of a transistor switching arrangement that for each pulse causes a flow of charging current to a storage capacitor until a predetermined voltage difference exists between the input and the storage capacitor. A feedback arrangement, comprising a further transistor or alternatively a high value resistor, maintains the input at a reference voltage dependent on the storage capacitor voltage in between successive input pulses, each of which supplements the reference voltage resulting from the immediately preceding input pulse. The storage capacitor voltage thus increases by a predetermined voltage increment for each input pulse until it reaches a predetermined value, corresponding to a predetermined number of said increments, when it triggers an output circuit to provide an output pulse.

3,706,891

A. C. STABLE STORAGE CELL

Nicholas M. Donofrio, Wappingers Falls, N.Y., and Richard H. Linton, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 17, 1971, Ser. No. 154,104
Int. Cl. H03k *23/08*
U.S. Cl. 307—238 **1 Claim**



This specification discloses an A.C. stable or stored charge storage cell for use in monolithic memories. The cell includes a capacitor that couples a drive line to a sense line. The capacitance of this capacitor is voltage dependent so that when charged it provides a high capacitance to couple signals on the drive line to the sense line and when discharged it provides a low capacitance to prevent the coupling of signals from the drive line to the sense line.

3,706,892

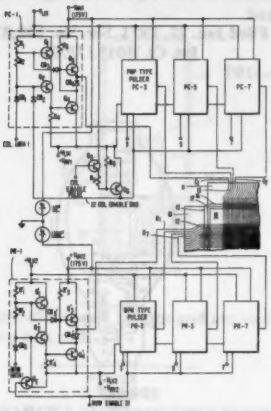
HIGH VOLTAGE PULSER CIRCUIT FOR DRIVING ROW-COLUMN CONDUCTOR ARRAYS OF A GAS DISCHARGE DISPLAY CAPABLE OF BEING MADE IN INTEGRATED CIRCUIT FORM

Thomas Edward O'Brien, Philadelphia, Pa., assignor to Owens-Illinois, Inc.

Filed May 28, 1971, Ser. No. 147,765
Int. Cl. H03k *17/56*
U.S. Cl. 307—241 **4 Claims**

There is disclosed an interfacing system for driving row-column conductor arrays to the gas discharge display panel in a low cost integrated circuit assembly. Due to the requirement of opposite polarity or bidirectional signals being applied to the conductors in the arrays, although the integrated circuits are functionally identical in translating low level logic signals to relatively high voltage (150 volts) pulse signals which are algebraically added to sustainer voltages, one of the circuits

includes as a part of the logic circuit an inverting transistor; and to reduce current loading by the logic circuit on external



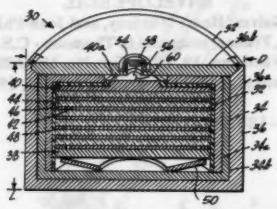
data sources and at the same time serve as a part of a logic gate; and the high voltage switching circuits include a feedback diode for enhancing the response time.

3,706,893

NUCLEAR BATTERY

Larry C. Olsen, Richland; Stephen E. Seeman, Kennewick; Bobby I. Griffin, and Charles J. Ambrose, both of Richland, all of Wash., assignors to McDonnel Douglas Corporation

Filed Sept. 19, 1969, Ser. No. 859,266
Int. Cl. G21d 7/00
U.S. Cl. 310—3 B **12 Claims**



Nuclear battery including one or more cells each comprising a radioactive fuel element or source and a semiconductor element positioned contiguously to the source and irradiated by it. The fuel element includes a radioactive material which is preferably promethium-147 metal or its oxide, promethia, and the semiconductor element includes a N^+/P or $N^+/P/P^+$ semiconductor wafer which is preferably silicon.

The semiconductor wafer has an energy threshold of radiation damage which is compatible with the maximum energy of the nuclear particles or radiation emitted by the radioactive material, to provide a long-life (minimal radiation damage) cell of optimum power output. Other versions include a nuclear battery utilizing a bi-directional fuel element, and certain compact and useful embodiments utilizing a multiple section cell therein.

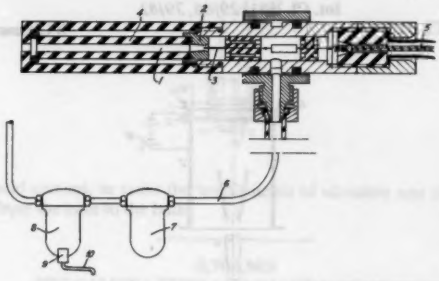
3,706,894

ELECTRO-AERODYNAMIC GENERATOR

Roger Tholome, 38 Meylan, France, assignor to Tunzini-Sames, Grenoble, France

Filed July 31, 1970, Ser. No. 59,910
Int. Cl. H02n 3/00
U.S. Cl. 310—10 **3 Claims**

This invention relates to an electrodynamic generator of the type comprising a passage for the flow of a fluid at least partially at supersonic speed from an upstream portion constituted by a convergent-divergent region in which is disposed ionization means substantially in the neck of the said region, to a downstream region at high potential in the neighborhood of the outlet from the passage. The invention is characterized in that the passage is constituted of a ceramic material or



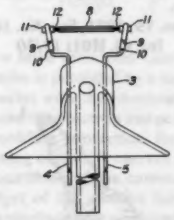
vitrified material and in that the internal wall is very smooth. Moreover, filters are provided in order to obtain an air supply substantially free from impurities. Such a generator which provides low currents at high voltages (several tens of kilovolts) is particularly suitable for the electrostatic deposition of coating products.

3,706,895

FLUORESCENT LAMP HAVING COATED INLEADS

William C. Martyny, Lyndhurst; Victor W. Miller, Highland Hts., and Ronald J. Olwert, Willoughby, all of Ohio, assignors to General Electric Company

Filed Feb. 17, 1971, Ser. No. 116,170
Int. Cl. H01j 1/02
U.S. Cl. 313—42 **7 Claims**



A fluorescent lamp in which the inleads or clamps of the electrodes are coated with a high temperature plastic containing a filler of an insulating inorganic material. The plastic is not removed by baking but remains in place in the completed lamp. One suitable material consists of an aromatic polyimide wherein the filler is zirconium oxide. The coating eliminates or lessens light-absorbing oxide rings and brown patches which form on the envelope ends as a result of the arc taking off from the inleads instead of from the electrode coil, a condition to which instant start lamps are particularly prone.

3,706,896

CATHODE-RAY TUBE HAVING PLANAR GRID ACCELERATOR ADJACENT AND ON SCREEN SIDE OF BEAM DEFLECTORS

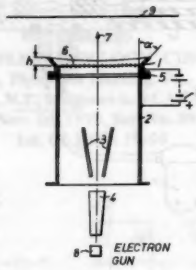
Klaus Schaffernicht, and Gottfried Schadlich, both of Ulm, Danube, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Filed July 15, 1970, Ser. No. 54,883

Claims priority, application Germany, July 16, 1969, P 19 36 229.9

Int. Cl. H01j *29/80, 29/82*

U.S. Cl. 313—78 2 Claims



A cathode-ray tube having a luminescent screen and deflecting means surrounding the path of an electron beam impinging on the screen deflecting the beam in two perpendicular directions. A planar grid electrode having a rectangular periphery is arranged between the screen and the deflecting means for producing a post-acceleration field between the screen and the grid electrode. A correction rim is mechanically and electrically connected to the periphery of the grid electrode and is designed to extend beyond the grid electrode toward the screen. An electrode, separate from the grid electrode, is arranged adjacent to and electrically insulated from the grid electrode and extends in the direction toward said deflecting means to enclose the electron beam. The deflecting means is preferably a pair of parallel deflecting plates, each pair spaced from one another along the path of the electron beam and effective to deflect the electron beam in one perpendicular direction; the pair of plates nearest the screen being arranged within the separate electrode.

3,706,897

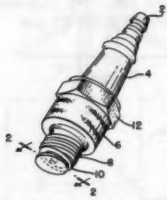
SPARK PLUGS

Harvey K. Shepardson, P.O. Box 161 North Filliwaup, Jefferson County, Wash.

Filed Jan. 19, 1971, Ser. No. 107,626

Int. Cl. H01t *13/20*

U.S. Cl. 313—141 3 Claims



A sparkplug for use in internal combustion engines having a disk shaped electrode mounted at an angle to the uniplanar base of the plug which serves as the other electrode. The fact that the disk electrode substantially overlies the other electrode and is mounted at an angle causes the disk to be cleaned by a sweeping action of gaseous movement during the explosion and further permits the generation of a variable spark which is directly related to the voltage and thus the speed of the internal combustion engine.

3,706,898

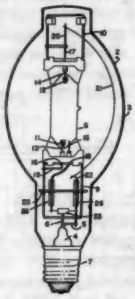
HIGH PRESSURE ELECTRIC DISCHARGE LAMP

Carl L. Peterson, Gloucester, Mass., assignor to GTE Sylvania Incorporated

Filed Jan. 22, 1971, Ser. No. 108,838

Int. Cl. H01j *17/00*

U.S. Cl. 313—197 5 Claims



The arc tube of an arc discharge lamp has two main electrodes and a starter electrode adjacent to one of them, the starter electrode being electrically connected to the other main electrode through a ceramic capacitor. The capacitance and voltage rating of the capacitor are such as to provide sufficient capacitive reactance for limiting the current to the starter electrode and to function as a direct current blocking capacitor during normal operation of the lamp.

3,706,899

GAS DISCHARGE DISPLAY PANEL WITH MINERAL POWDER BETWEEN APERTURED MATRIX AND ENVELOPE SEAL

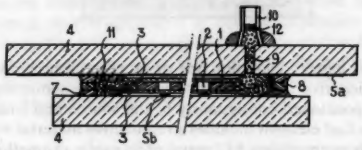
Jean-Pierre Galves; Henri Monfroy, and Jean-Philippe Reboul, all of Paris, France, assignors to Thomson - C.S.F.

Filed Jan. 19, 1971, Ser. No. 107,688

Claims priority, application France, Jan. 30, 1970, 7003281

Int. Cl. H01j *61/06, 61/30*

U.S. Cl. 313—188 3 Claims



In a gas-discharge panel comprising a matrix inserted between two thick slabs scaled to one another by a bond surrounding the matrix, the filling of the space extending between the matrix and the bond by a mineral powder, of small glass balls for instance.

3,706,900

PROJECTION FILAMENT LAMP

Ferdinandus Maria Josephus Van Beek, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 9, 1971, Ser. No. 113,876

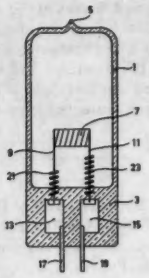
Claims priority, application Netherlands, Feb. 18, 1970, 7002305

Int. Cl. H01k

U.S. Cl. 313—222 4 Claims

An electric filament lamp for projection purposes in which the two straight ends of the filament body are incorporated in

a pinch seal and are each surrounded by a member supporting said ends; said members are preferably constructed as helically wound wires of unequal lengths and are incorporated at their ends in the pinch seal.



3,706,901

DISCHARGE LAMP PROVIDED WITH A SUBSTANTIALLY STRAIGHT OBLONG DISCHARGE TUBE

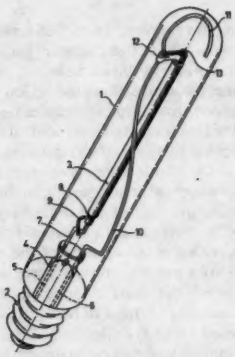
Gerard Marie Jules De Neve, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed March 1, 1971, Ser. No. 119,488

Claims priority, application Netherlands, March 14, 1970, 7003667

Int. Cl. H01j *1/96, 19/50*

U.S. Cl. 313—285 3 Claims



The invention relates to a discharge lamp provided with a substantially straight oblong discharge tube and an outer envelope surrounding this tube.

The invention provides a solution in which a simple positioning of the discharge tube in the outer envelope can be obtained with the aid of an elongated part of the terminal wire. This solution is combined with an anti-shadow winding of that part of the terminal wire, which extends along the straight part of the discharge tube. By using this anti-shadow winding there need not be the risk of cracks in the outer envelope as a result of expansion of the terminal wire (by heat produced in the discharge tube).

3,706,902

ELECTRIC LAMP WITH RESILIENT BASE

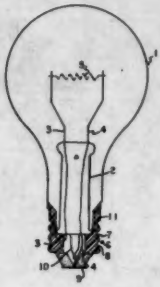
Robert Wilbur Cookson, Reading, Mass., assignor to Sylvania Electric Products

Filed June 1, 1970, Ser. No. 42,334

Int. Cl. H01j *1/18*

U.S. Cl. 313—318 4 Claims

An electric lamp having a light-transmitting envelope, such as a bulb, attached to a contact base by a resilient cement such as a di-methyl silicone rubber, and spaced from the base by said cement, to resist the transmission of vibration and shock from the base to the bulb.



3,706,903

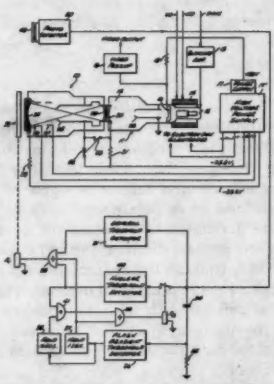
SEC CAMERA TUBE AND IMAGE INTENSIFIER PROTECTION AGAINST EXCESSIVE LIGHT DAMAGE

Jay M. Hansen, Santa Monica; Donald J. Holscher, Playa Del Rey, and Paul R. Prince, Manhattan Beach, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 3, 1969, Ser. No. 870,544

Int. Cl. H01j *31/48*

U.S. Cl. 315—10 13 Claims



Protection of a low level television camera tube used with an image intensifier tube is provided by a shutter and a current limiting element in series with the photocathode of the image intensifier tube to cause the electron image in the intensifier to defocus, thereby providing protection for the camera tube while the shutter is being closed. A current limiting element in series with the photocathode of the camera tube further aids in protecting the target of the camera tube by reducing the kinetic energy of photoelectrons produced in response to a light image from the intensifier. A photodetector responds to excessive illumination to cause a control circuit to close the shutter.

3,706,904

SWEEP HOLD-OFF CIRCUIT

William J. Mordan, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

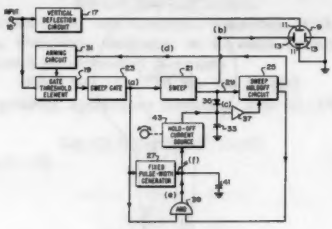
Filed June 10, 1970, Ser. No. 44,983

Int. Cl. H01j *29/70*

U.S. Cl. 315—19 4 Claims

A circuit for use with an oscilloscope sweep circuit includes an integrator for producing a control signal that establishes a

substantially fixed hold-off time between the arming and triggering of the sweep as a function of the deviation from a



reference value of the time between the arming and triggering of the sweep circuit.

3,706,905

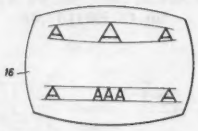
DEFLECTION COMPENSATION SYSTEM

Jack F. Alexander, San Antonio, Tex., assignor to Computer Terminal Corporation, San Antonio, Tex.

Filed May 14, 1970, Ser. No. 37,322

Int. Cl. H01j *29/70*

U.S. Cl. 315—21 CH **18 Claims**



A system for correcting distortion in the deflection of the beam in a cathode ray tube used to display lines of alphanumeric characters as in a computer terminal unit. Characters are generated one at a time rather than in a TV type raster. This requires a horizontal deflection signal of sawtooth form to create lines, and two separate vertical deflection systems, a major vertical deflection to generate the desired number of lines on the screen, and a minor vertical deflection of much higher frequency to write the characters on a given line. Correction is applied to the horizontal deflection signal and to the minor vertical deflection signal to compensate for the distortion caused by using a short, flat screened tube. The correction signal for both horizontal and vertical may be derived from a single source.

3,706,906

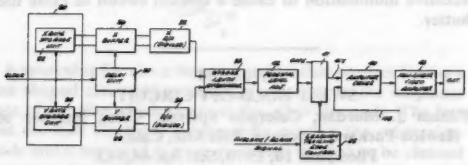
BEAM INTENSITY CONTROL FOR DIFFERENT WRITING RATES IN A DISPLAY SYSTEM

Edward T. Koussa, Yorba Linda, and Lawrence K. Iboshi, Fullerton, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed June 8, 1970, Ser. No. 44,465

Int. Cl. H01j *29/70*

U.S. Cl. 315—22 **19 Claims**



The invention comprises an arrangement for controlling the uniform intensity of different length displayed strokes, produced at different writing rates by a deflectable beam of a CRT, during a series of equal duration clock periods. The arrangement which is provided with the writing rates of each stroke along the X and Y axes of the display surface, estimates stroke length L; L is derived by implementing $k(X/2 + Y/2 + P/2)$, where X and Y are the writing rates along the two axes, P is the greater of the two rates and k is either 1 or preferably 0.94. The estimated stroke length is used to control beam intensity as the beam is deflected from the stroke's start point to its end point.

3,706,907

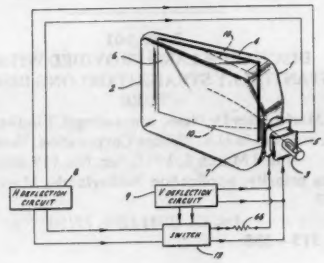
DEFLECTION CIRCUIT WITH MEANS FOR GENERATING CORRECTION WAVEFORM

Paul G. Wolfe, Oreland, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed May 1, 1970, Ser. No. 33,640

Int. Cl. H01j *29/70*

U.S. Cl. 315 – 27 GD **7 Claims**



A circuit for developing, in a deflection system for a cathode ray tube in which the electron gun is disposed at an angle other than normal to the cathode ray tube screen, a correction waveform to insure the production of a rectangular raster on the screen. A voltage waveform corresponding substantially to the uncorrected vertical deflection current waveform is applied to the vertical deflection coil through a resistor and a switch circuit which is rendered conductive during horizontal sweep intervals and non-conductive during horizontal flyback intervals of the deflection system. Energy thus supplied to the vertical deflection coil during these intervals cooperates with the inductance of the deflection coil to generate the desired correction waveform within the deflection coil. This avoids the need for specially designing the amplifying stages and the vertical deflection circuits to accommodate a modified vertical deflection waveform produced at low level and supplied to the vertical deflection coil.

3,706,908

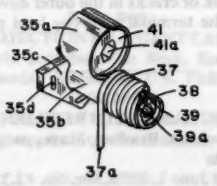
HORIZONTAL DEFLECTION CONTROL MEANS

Chris A. Petri, La Grange, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 3, 1970, Ser. No. 60,484

Int. Cl. H01j *29/76*

U.S. Cl. 315—27 SR **5 Claims**



A saturable reactor for providing picture horizontal scan width and scan linearly control for a television horizontal

deflection system is connected in series with standard cathode ray tube magnetic-deflection coils. A core of the saturable reactor is adjusted lengthwise of its encompassing coil to vary the scan width by directly altering the inductance of the coil. Independently therefrom, a permanent magnet is rotatably mounted adjacent to one end of the coil opposite of and spaced from an extended portion of the core, the magnet having a preselected one of its poles selectively rotated closer to and further away from the core to vary the scan linearity by directly altering the premagnetization level of the core. The magnet is effective to either add or to buck respectively the induced polarization of the core during periods of forward or reverse deflection current to give linearity control during both the initial and final portions of a sawtooth sweep current waveform having a zero-reference axis.

3,706,909

CATHODE RAY TUBE WITH MUTUALLY INTERSECTING FOCUSING COILS

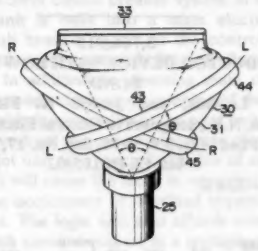
Asahide Tsuneta, Kawasaki, and Norio Harao, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Oct. 23, 1970, Ser. No. 83,507

Claims priority, application Japan, Oct. 28, 1969, 44/85716

Int. Cl. H01j *29/66*

U.S. Cl. 315—27 GD **5 Claims**



A cathode ray tube comprising an envelope, a target disposed at the front of the envelope, an electron gun emitting electron beams toward the target, a deflecting coil and a focusing device comprised of a pair of mutually intersecting focusing coils positioned between the target and deflecting coil, the focusing device providing an electromagnetic field acting in the same direction as that in which the electron beams are deflected so as to focus them.

3,706,910

COAXIAL MAGNETRON SLOT MODE SUPPRESSOR

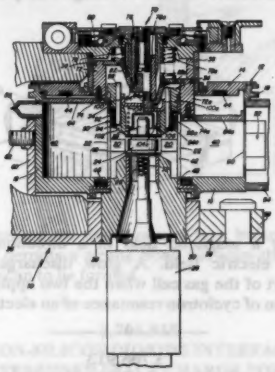
Robert J. Foreman, Southboro, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed May 28, 1971, Ser. No. 147,914

Int. Cl. H01j *25/50*

U.S. Cl. 315—39.51 **13 Claims**

The invention discloses a coaxial cavity magnetron provided with a tunable slot mode absorber adapted to be picked up and moved in consort with the main cavity tuning means. A lossy ceramic ring member is operatively associated with a main tuner mechanism to be actuated and carried a varying distance adjacent to coupling slots in a common boundary wall between two resonant systems. In an embodiment covering a tuning range of 1,100 MHz the slot mode absorber is actuated over a portion of the frequency range approaching the upper limits. Improved starting performance through reduced time jitter due to mode instability renders the applicable device acceptable for short pulse operating conditions. The positioning of the mode suppressor within the slots also



presents a lossy structure to the working modes of the device in the region of the tuning means to level power outputs during the tuning excursion.

3,706,911

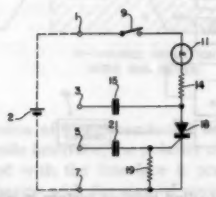
CORRECT EXPOSURE ANNUNCIATOR CIRCUIT

Dennis J. Wilwerding, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 28, 1971, Ser. No. 110,700

Int. Cl. H05b *41/36*

U.S. Cl. 315—158 **23 Claims**



A switching means connects a light annunciator with a voltage source. The annunciator indicates that a scene has been sufficiently illuminated to properly expose a light sensitive film of an associated camera. The switching means is responsive to the operation of a light quenching means of a computer-flash system for providing an effective contact closure thereby energizing the annunicator. The switching means is then responsive to a manual switch opening or a subsequent operation of a light flashing means of the computer-flash system, for opening the switching means and de-energizing the annunciator.

3,706,912

GASEOUS DISCHARGE DISPLAY DEVICE UTILIZING CYCLOTRON RESONANCE OF ELECTRON

Hideo Ikegami, Nagoya, Japan, assignor to Fujitsu Limited, Kawashi, Japan

Filed Aug. 9, 1971, Ser. No. 170,084

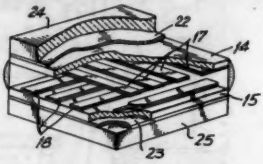
Claims priority, application Japan, Sept. 10, 1970, 45/69890

Int. Cl. H01j *61/64*; H05b *41/02*

U.S. Cl. 315—169 TV **6 Claims**

An addressable gaseous discharge device utilized for information display comprises a pair of spaced parallel oppositely positioned insulating walls forming between them a gas cell filled with ionizable gas. At least one of the insulating walls is

transparent. The perimeters of the insulating walls are hermetically sealed. Field electrodes mounted on the insulating walls apply a microwave electric field to the gas cell and field electrodes mounted on the insulating walls partly and selectively apply a magnetic field in a direction crossing the microwave electric field. A glow discharge occurs in a selected part of the gas cell when the two applied fields meet the condition of cyclotron resonance of an electron.

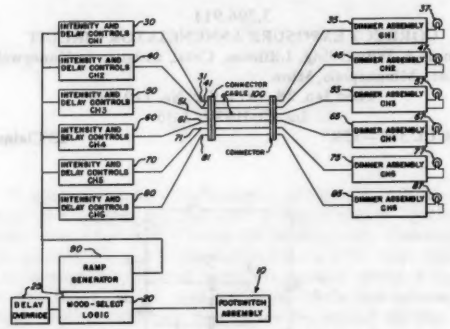


3,706,913

PLURAL CHANNEL LIGHT DIMMING SYSTEM

James M. Malatchi, 120 North Park Ave., Montrose, Colo.

Filed July 12, 1971, Ser. No. 161,653
Int. Cl. G05f 1/40; H05b 37/02, 39/04
U.S. Cl. 315—292 16 Claims



A remote controlled lighting system in which a foot switch assembly operates through a logic network to selectively energize intensity and delay controls in the form of resistance networks controlling the energization of a capacitor which with an output voltage from a ramp generator providing pulsed signals corresponding to an alternating current supply will control operation of a triac connecting the lights to the alternating current supply for proportionate periods of time in each alternating half cycle of the alternating current supply. The circuit includes provisions for delaying the changing in energization levels in a shift from one desired level to a level of energization through switching and further includes a master kill switch to de-energize all controls.

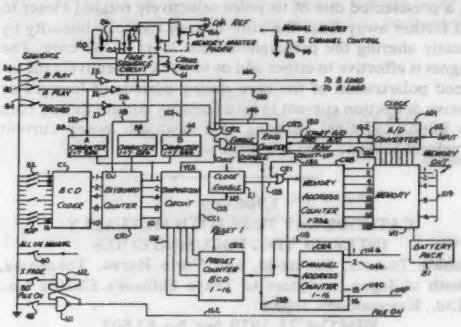
3,706,914

LIGHTING CONTROL SYSTEM

George F. Van Buren, 4437 Vista Del Monte, Sherman Oaks, Calif.

Filed Jan. 3, 1972, Ser. No. 214,878
Int. Cl. H05b 39/00
U.S. Cl. 315—316 16 Claims

A light control system for the control of a plurality of lights in a pre-programmed lighting sequence. The system is comprised of a keyboard module and one or more controller modules. Each controller module contains 16 manually operated light controllers and a semiconductor memory capable of storing 16 individual settings for each of the 16 light controllers. The keyboard has 16 pushbuttons through which any of the 16 lighting combinations may be put into memory or selected out of memory for control of the lights. First and second registers are provided for retaining any pair of lighting combinations, with a cross fade control on the keyboard being adapted to provide a smooth transition from one of such lighting combinations to the other combination. An automatic sequencing selection is provided whereby each of the 16 lighting combinations will be automatically selected in sequence through the use of the cross fade control. Other features of the system include the ability to program one lighting combination while playing another lighting combination, to have one or more light controls under manual control while the rest are under control by the memory, and a means for displaying on a meter any stored light control setting.

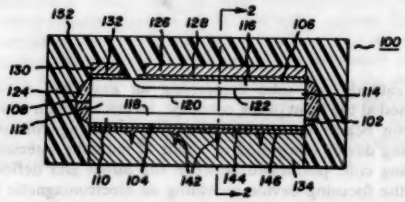


3,706,915

SEMICONDUCTOR DEVICE WITH LOW IMPEDANCE BOND

William F. Lootens, and Joseph K. Flowers, both of Skaneateles, N.Y., assignors to General Electric Company

Filed March 9, 1970, Ser. No. 17,713
Int. Cl. H01l 5/02
U.S. Cl. 317—234 R 5 Claims



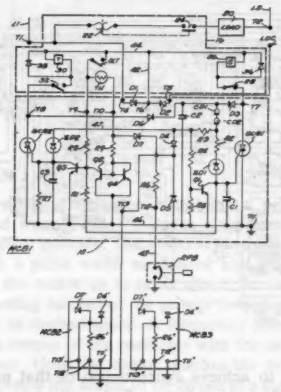
A semiconductor device is formed by scoring a conductive surface of a substrate and locating a semiconductive element over a portion of the capillary formed by scoring. Solder in molten form is associated with the portion of the capillary remote from the semiconductive element and is drawn by the capillary under the semiconductive element to form a tenacious, low impedance interconnection therewith. The substrate may be a dielectric or a metal heat sink. Leads may be secured to the substrate similarly as the semiconductive element is secured. A dielectric substrate may be similarly secured to a metal heat sink. Multiple interconnecting or parallel capillaries may be employed. The capillaries may be provided with a remote interconnection, an interconnection for solder receipt, or an indicator portion remote from solder receipt. Plural semiconductive elements may be mounted to a single substrate with solder fed to the semiconductive elements simultaneously or sequentially. On a dielectric substrate the semiconductive elements may be electrically isolated by removing a conductive surface portion after soldering. The capillaries may also take the form of apertures.

3,706,916

REMOTE CONTROL CIRCUIT BREAKER SYSTEM

Werner B. Halbeck, Cedarburg; John A. Quaal, Wauwatosa; Clyde F. Robbins, Milwaukee; Walter L. Rutchik, Wauwatosa, and Lawrence J. Ryczek, Milwaukee, all of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Jan. 19, 1972, Ser. No. 218,955
Int. Cl. H02h 3/08
U.S. Cl. 317—33 SC 8 Claims



A remote control circuit breaker system in which an electronic logic unit is built into a main electromagnetically operated circuit breaker to act as the controlling interface between the latter and a remotely located pilot control-circuit breaker unit. In addition to directing main circuit breaker operation to provide closing and opening of the same in correspondence with the operation of the pilot unit, the logic unit responds on overload trip open of the main circuit breaker to subject the pilot unit to a controlled value of simulated overload current as will cause the latter to trip open and afford indication of the occurrence of overload tripping in the main circuit breaker. The logic unit also affords coordination of a plurality of such circuit breakers in a multiphase A.C. system so that all will be responsive to the operation of a single remote pilot unit, and will also trip open following overload response of any thereof. Further the logic unit automatically functions in the event of a fault occurring in the pilot unit or the line connecting it with the main breaker to limit the value of fault to a non-destructive value, and prevents repeated circuit breaker cycling in the event the pilot breaker fails to open. The main circuit breaker uses double-break contacts and permanent magnet latching to improve its arc rupture withstandability and eliminate the necessity of continuous energization of its electromagnetic operating coils. The overload trip mechanism in the main circuit breaker uses a low friction latch, and together with ambient temperature compensation in the bimetal latch release enhances the trip point precision.

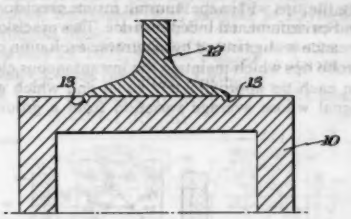
3,706,917

CONTROLLED WELDING TECHNIQUE FOR A SILVER CONTAINER

Dominick John Zeppieri, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Sept. 28, 1971, Ser. No. 184,398
Int. Cl. H01g 9/08
U.S. Cl. 317—230 6 Claims

A technique for welding which controls the depth of penetration of a nickel wire into the bottom of a silver capacitor can having a thickness range of approximately 0.010 to 0.020 inch. The technique limits and advantageously controls the formation of columnar structure in the weld area. This control is achieved by forming serrations or the like on the bottom of the can prior to the attachment of the nickel wire to



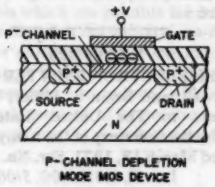
be welded thereon, so that a proper heat balance is created thereon that permits a strong bond between the nickel wire and the silver can to be formed.

3,706,918

SILICON-SILICON DIOXIDE INTERFACE OF PREDETERMINED SPACE CHARGE POLARITY

Frank J. Barone, 711 East Manhattan Drive, Tempe, Ariz., and Donald L. Tolliver, 75 East Hoover Avenue, Phoenix, Ariz.

Division of Ser. No. 748,036, June 26, 1968. This application Oct. 5, 1970, Ser. No. 78,242
Int. Cl. H01l 3/00
U.S. Cl. 317—235 R 1 Claim



P-CHANNEL DEPLETION MODE MOS DEVICE

In the fabrication of a semiconductor device having a silicon-silicon dioxide interface, the polarity of the space charge region associated with the interface is predetermined by a method which begins with the step of pretreating the silicon surface with a selected reagent capable of inducing the desired space charge polarity. For example, a pretreatment with chromic acid induces a negative space charge region, whereas a pretreatment with nitric acid induces a positive charge. The interface is then formed by vapor deposition of a silicon dioxide layer on the silicon surface. The pretreatment has been found capable of inducing a predetermined charge when the interface is provided by vapor deposition, but is wholly ineffective when the interface is provided by thermal oxidation. It is well known that thermal oxidation of a silicon surface inherently produces an interface having a positive space charge region.

3,706,919

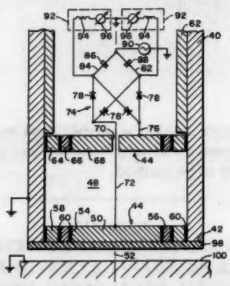
CAPACITIVE GAUGE

Robert C. Abbe, Newton, Mass., assignor to ADE Corporation, Newton, Mass.

Filed Aug. 17, 1970, Ser. No. 64,240
Int. Cl. H01g 7/00
U.S. Cl. 317—246 59 Claims

A capacitive probe having at least two electrically conducting probe tips or electrodes centrally placed within an electrically conducting housing and axially displaced from each other within the housing. A physical dimension is measured by determining the capacitance between one probe tip and a surface, the capacitance therebetween varying with the dimension being measured. Precise machining of planar probe tips

and assemblies to make them identical, their close placement, and the use of a moisture impenetrable dielectric for supporting the tips within the housing insure precision measurement and environmental independence. This precision and its maintenance is augmented by electronic excitation circuitry for the probe tips which maintain the instantaneous electric potential on each tip approximately equal and which gives an output signal whose average variation from a ground or common



potential is directly indicative of the distance being gauged. Modifications to the basic probe construction include: provisions for guarding each probe tip with a substantially equal potential: thin or thick film deposition probe tip constructions; and probes having a plurality of tips for sensing a multiplicity of factors influencing the capacitance between the probe and a surface with circuits for separating the factors. A specific application of this for dielectric strip width measurement is presented.

3,706,920

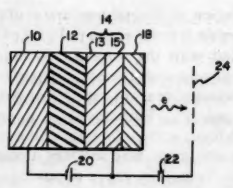
TUNNEL ELECTRON EMITTER CATHODE

Larry V. Caldwell, and Brian S. Miller, both of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Army

Filed March 18, 1971, Ser. No. 125,825

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **7 Claims**



A high efficiency tunnel electron emitter in which a unique emitting layer is applied to the insulator layer of a metal-insulator-emitting layer structure. The emitting layer consists of a low work function material such as cesium that is deposited directly on the insulator layer, a thin layer of a conductive metal that is deposited onto the cesium, and an exposed surface of the conductive metal having a layer of cesium oxide applied thereto to lower the work function. The amount of cesium deposited on the insulator layer is critical and is monitored for the proper amount during deposit.

3,706,921

REACTOR CONTROL INCLUDING INDIVIDUAL AND GROUP ROD MOTOR CONTROLS

Philip J. Rosen, Oak Park, Mich., assignor to Diamond Power Specialty Corporation, Lancaster, Ohio

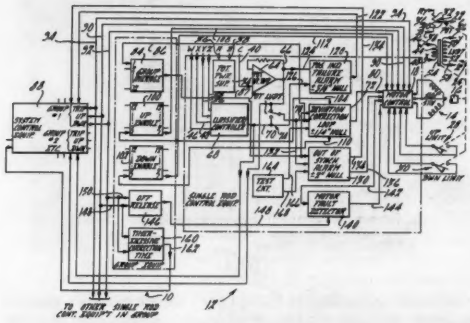
Filed Aug. 8, 1968, Ser. No. 751,216

Int. Cl. G05b *9/02*; G21c *7/08*

U.S. Cl. 318—564 **8 Claims**

A control system for controlling the relative position of a plurality of control rods within a nuclear reactor, thus controlling the energy output of the nuclear reactor. The control system includes a single rod control subsystem for controlling the motion of the individual rods within the nuclear material and a group control subsystem for controlling a plurality of rods of a group.

The system includes a circuit for precluding any single rods or group of rods from being actuated in a direction opposite to



that commanded to achieve synchronism of that particular rod. Thus, the rods moving from a first position to a second position, a reference position is established which is the average of the position of all the rods and the only rods which will move to position 2 will be those which deviate further from position 2 than the reference level. The system also includes a fault detection system.

3,706,922

LINEAR COMB-SHAPED SYNCHRONOUS MOTOR

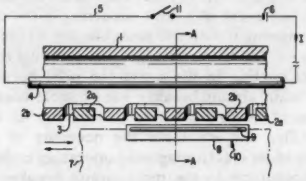
Junpei Inagaki, Yokohama, Japan, assignor to Tokyo Shibaura Electric Company, Limited, Kanagawa-ken, Japan

Filed June 8, 1971, Ser. No. 151,077

Claims priority, application Japan, June 11, 1970, 45/49986

Int. Cl. H02k *41/02*

U.S. Cl. 318—135 **9 Claims**



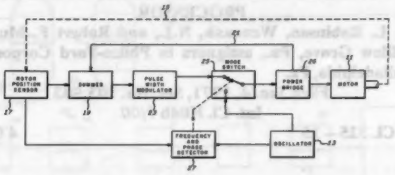
A linear comb-shaped synchronous motor includes a tubular-shaped reaction rail, an excitation conductor extending through said tubular shaped reaction rail, and a moving member containing an armature. The tubular shaped reaction rail has at least one zigzag slit along the longitudinal direction thereof and each side of the reaction rail is provided with comb-shaped pole members. As current flows through the excitation conductor, the comb-shaped pole members are magnetized such that the comb-shaped pole members aligned along one side of the zigzag slit make a trail of south poles and the comb-shaped pole members aligned along the other side of the zigzag slit make a train of north poles. The moving member is placed near the reaction rail through an air gap between the armature and the pole members, and the same is driven along the reaction rail.

3,706,923

BRUSHLESS D.C. MOTOR ACCELERATION SYSTEM

John C. G. Dunfield, Phoeniz, Ariz., assignor to Sperry Rand Corporation

Filed April 28, 1971, Ser. No. 138,160
Int. Cl. H02k *29/00*
U.S. Cl. 318—254 6 Claims



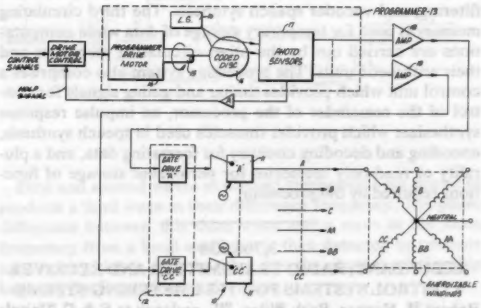
A brushless d.c. motor containing a permanent magnet rotor and wound stator includes a resolver for sensing the rotor angular position. The position sensor is used in conjunction with a pulse width modulator and switching circuit in bringing the motor up to rated speed. An oscillator provides an alternating current of the proper frequency for driving the motor at its desired speed. A frequency phase detector compares the output of the oscillator with the output of the position sensor. Until the motor reaches the desired speed, the switch permits the motor to be driven in a closed loop fashion in response to signals from the position sensor. When the detector senses frequency and phase coincidence, the switch transfers operation of the motor from the sensing means to the oscillator.

3,706,924

POWER SUPPLY FOR A STEPPING MOTOR

Jason A. Adler, Costa Mesa, Calif., assignor to Royal Industries, Inc., Pasadena, Calif.

Filed Dec. 4, 1969, Ser. No. 882,035
Int. Cl. G05b *19/40*
U.S. Cl. 318—685 3 Claims



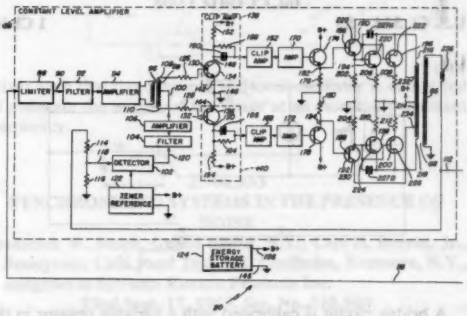
A programmed power supply rectifies multi-phase A.C. power to produce signal polarity D.C. voltage and applies the D.C. voltage to the stator windings of a multi-phase motor in a predetermined sequence so as to develop a rotating magnetic field, and the motor responds thereto by rotating discrete mechanical increments in a step-by-step fashion. The stator windings are arranged in a star configuration having a neutral and each winding is energizable independently of the others. The power supply includes a triggerable rectifying element for each winding and a programmer which is responsive to an external source of signals for triggering the rectifying elements in the predetermined sequence.

3,706,925

POWER REGULATING AMPLIFIER SYSTEM

Bjorn H. Engelhardt, Barrington, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed May 25, 1971, Ser. No. 146,716
Int. Cl. G05f *1/44*; H04b *13/02*
U.S. Cl. 323—22 T 12 Claims



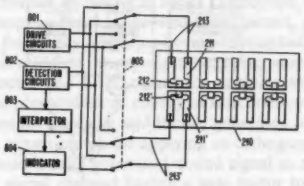
A directional transducer system adapted for generating signals indicative of the direction of a source of radiant energy submerged in a fluid medium. This system is particularly useful in sonar applications which contemplate the use of a multisectioned transducer with arithmetic means for combining the signals received by each of these transducer sections to provide a set of three signals, namely, a reference signal and two coordinate signals which are suitable for transmission via a telemetry link to a utilization device such as a display. Means are also disclosed for compressing the dynamic range of the signals to facilitate their transmission via a telemetry link as well as means for energizing a transducer with a signal having an average power independent of a variation in the supply voltage utilized in energizing the circuitry of the invention.

3,706,926

METHOD AND APPARATUS FOR TESTING BATCH FABRICATED MAGNETIC HEADS DURING MANUFACTURE UTILIZING MAGNETIC FIELDS GENERATED BY OTHER MAGNETIC HEADS

Stephen M. Barrager, Palo Alto, Calif.; Geoffrey Bate, Boulder, and Sidney H. Smith, Broomfield, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 4, 1971, Ser. No. 149,976
Int. Cl. G01r *35/00*
U.S. Cl. 324—34 R 10 Claims

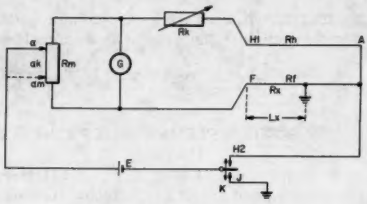


Magnetic head elements are batch fabricated on areas of a substrate. During manufacture, and before final separation and processing of the areas into discrete multi-track magnetic heads, defective areas are identified for removal. An electric signal source subjects the head areas to a magnetic field which is detected as electric current in each head area. The detected current value in acceptable head areas falls within a predefined range. All head areas having a current outside the range are defined as defective. The magnetic field emanates from one set of head areas in the vicinity of another set of head areas being tested.

3,706,927
METHOD FOR MEASURING THE ABSOLUTE DISTANCE TO A LEAKAGE FAULT IN AN ELECTRICAL CONDUCTOR

Gustaf I. Jedvall, deceased, late of Stockholm, Sweden, by Arne Mogensen, administrator, Crusebjoerns Veg 27, S-140 30 Uttran, Sweden

Filed April 27, 1971, Ser. No. 137,911
Int. Cl. G01r 31/08
U.S. Cl. 324—52 1 Claim

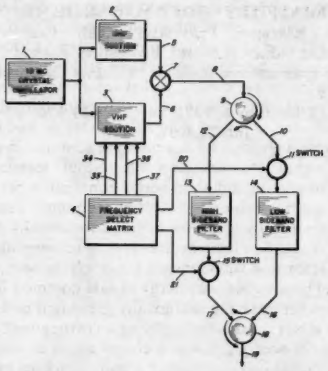


A bridge circuit is calibrated with a variable resistor in the loop across the current detector which includes an unfaulted as well as the faulted conductor. A potentiometer resistor making up the other loop across the current detector is set in accordance with the known length of the faulted conductors prior to adjustment of the variable resistor. This calibration occurs with the current source connected between the potentiometer contact and another unfaulted conductor. The measurement is accomplished by adjusting the contact when the current source is connected between the potentiometer contact and the fault.

3,706,928
COHERENT FREQUENCY MULTIPLIER AND ENCODER

Emanuel A. Beck, Silver Spring, and Arthur J. Bassnett, Lewisdale, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 12, 1964, Ser. No. 410,817
Int. Cl. H03b 25/00
U.S. Cl. 325—33 5 Claims



The present invention provides a signal generator capable of producing randomly selected coherent output frequencies. Specifically, the proposed generator comprises a first section which generates a carrier frequency, and a second section, containing a chain of frequency multipliers, which is capable of producing a plurality of coherent modulating frequencies. The carrier frequency is first selectively modulated with random ones of the plurality of modulating frequencies to produce high and low sideband and the high and low sidebands are then selectively connected to the output of the generator by a random code.

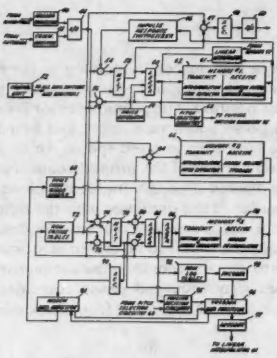
ERRATUM

For Class 324—33 see:
Patent No. 3,706,938

3,706,929
COMBINED MODEM AND VOCODER PIPELINE PROCESSOR

John L. Robinson, Wenonah, N.J., and Robert F. Munnich, Willow Grove, Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed Jan. 4, 1971, Ser. No. 103,503
Int. Cl. H04b 1/00
U.S. Cl. 325—15 4 Claims



A digital pipeline processing system for implementing both vocoder and data modem functions. The pipeline capability is provided by three circulating memories and two associated arithmetic units. The first circulating memory and its arithmetic unit implement the functions of vocoder spectrum analysis modem modulation and modem demodulation. The second circulating memory and its arithmetic unit implement the functions of vocoder pitch extraction, vocoder parameter filtering, and vocoder speech synthesis. The third circulating memory is used for temporary storage of data while computations are carried out by the other circulating memories and their arithmetic units. The processing system also comprises a control unit which provides timing and gating signals for control of the remainder of the processor, an impulse response synthesizer which provides sinusoids used in speech synthesis, encoding and decoding circuitry for formating data, and a plurality of read-only memories for permanent storage of functions required by the processor.

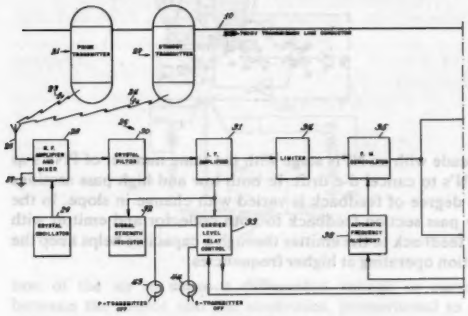
3,706,930
REDUNDANT, RADIO TRANSMITTER AND RECEIVER CONTROL SYSTEMS FOR TELEMETERING SYSEMS

Robert H. Harner, Park Ridge, Ill., assignor to S & C Electric Company, Chicago, Ill.

Continuation of Ser. No. 777,402, Nov. 20, 1968, abandoned.
This application Nov. 27, 1970, Ser. No. 93,488
Int. Cl. H04b 7/02
U.S. Cl. 325—56 15 Claims

For continuity in monitoring a variable, such as current flow, in a conductor of a high voltage electric power transmission line, prime and standby radio transmitters are mounted on each conductor of a polyphase system and are arranged to operate at the same nominal but slightly different carrier frequencies and at different field strength levels. A radio receiver for each set of prime and standby radio transmitters is located at a remote point, is responsive to both frequencies and both field strength levels and is arranged to control the

operation of relaying and metering equipment and to indicate the operating status of the transmitters. Additionally, prime and standby receivers for each phase conductor are located at the remote point and are arranged to be responsive to a single transmitter on each phase conductor or to prime and standby transmitters on each phase conductor operating at independent carrier frequencies or to prime and standby transmitters



on each phase conductor operating at the same nominal but slightly different carrier frequencies and at different field strength levels. Prime and standby relaying and metering equipment is operated by the prime and standby radio receivers. Signals received by the prime and standby radio receivers are combined to provide an indication of the operating status of the individual receivers.

3,706,931

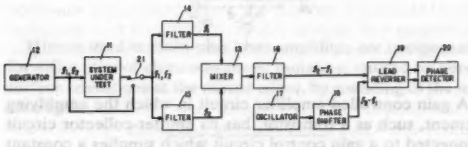
APPARATUS FOR USE IN MEASURING PHASE DISPERSION PRODUCED BY APPARATUS OR A SYSTEM

Mahadevan Subramanian, Whippany, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed April 1, 1971, Ser. No. 130,269

Int. Cl. H04b *3/46*

U.S. Cl. 325—67 **4 Claims**



First and second waves at distinct frequencies are mixed to produce a third wave at their difference frequency. The phase difference between this third wave and a wave at the same frequency from a local oscillator is then detected to produce an output which is directly related to the phaseal relationship between the first and second waves.

3,706,932

AMPLITUDE INDEPENDENT, AUTOMATIC FREQUENCY CONTROL/DISCRIMINATOR

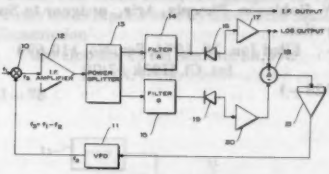
Richard Smith Hughes, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 7, 1971, Ser. No. 104,618

Int. Cl. H04b *1/26*

U.S. Cl. 325—438 **6 Claims**

A system for deriving a constant intermediate frequency output over a band of input frequencies comprising a mixer, a power splitter for splitting the output of the mixer into two segments of equal power, two band pass filters connected to the power splitter and a servo loop incorporating a variable frequency local oscillator whose output is connected to the



mixer such that the output of the local oscillator is controlled to maintain the output of the mixer at an essentially constant frequency.

3,706,933

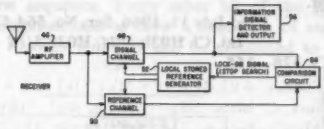
SYNCHRONIZING SYSTEMS IN THE PRESENCE OF NOISE

Frederick W. Bidell, Grand Island, N.Y.; Carl D. Herold, Jr., Sunnyvale, Calif., and James H. Lindholm, Kenmore, N.Y., assignors to Sylvania Electric Products Inc.

Filed Sept. 17, 1963, Ser. No. 310,969

Int. Cl. H04l *7/00, 9/00;* **H04b** *3/28*

U.S. Cl. 325—479 **14 Claims**

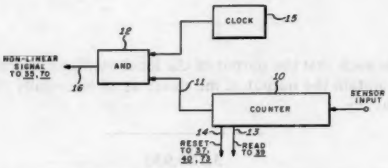


11. In the receiver of a pseudo-random communication system in which a locally generated coded signal is to be correlated with a received similarly coded signal, means for recognizing the synchronization of said local and received signals in the presence of undesired received energy, such as noise, interference, jamming or combinations thereof, which comprises: a signal channel having input and output terminals and including in series connection between said input and output terminals a first mixer circuit, a first intermediate frequency amplifier having a bandwidth much narrower than the bandwidth of said received signal, and a first detector and filter circuit; a reference channel having an input terminal in common with said signal channel, and an output terminal, said reference channel including in series connection between its input and output terminals a second mixer circuit, a second intermediate frequency amplifier having substantially the same bandwidth as said first intermediate frequency amplifier, and a second detector and filter; means for applying said received coded signal plus undesired energy to said common input terminal; means for applying said locally generated coded signal to said first mixer; means for applying an orthogonally related version of said locally generated coded signal to said second mixer; said signal channel having a gain factor to produce a signal level at the output terminal of said signal channel lower than the signal level at the output terminal of said reference channel when said received and locally generated coded signals are not synchronized and to produce a larger signal level at the output terminal of said signal channel than the signal level at the output terminal of said reference channel when said received and locally generated coded signals are synchronized; and, means connected to the output terminals of said signal and reference channels for comparing the levels of signals appearing thereat and operative to provide an output signal indicative of which level is higher.

3,706,934
APPARATUS FOR LINEARIZING A NON-LINEAR SIGNAL

Robert W. Robinson, Phoenix, Ariz., assignor to Sperry Rand Corporation

Filed Jan. 28, 1971, Ser. No. 110,694
Int. Cl. H03k 17/00
U.S. Cl. 328—1 **18 Claims**

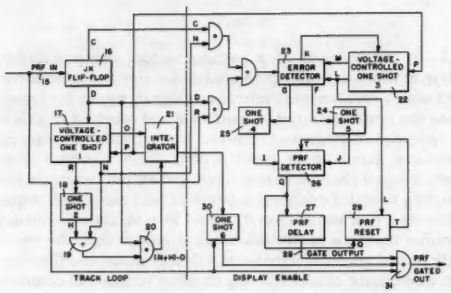


Linearizing apparatus comprising a controllable frequency divider responsive to the signal to be linearized for providing a second signal with frequency selectively controlled multiples of the input signal to be linearized. A pulse counter accumulates the cycles of the second signal and controlling means responsive to the count conditions attained by the pulse counter selects the controlled multiples in accordance with the attainment of predetermined count conditions.

3,706,935
PULSE REPETITION FREQUENCY DETECTION AND LOCK-ON SYSTEM

Richard Smith Hughes, Code 4022 USNOTS, China Lake, Calif.

Filed July 11, 1966, Ser. No. 564,439
Int. Cl. H03b 3/04; H03k 5/18
U.S. Cl. 328—155 **1 Claim**



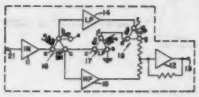
A system for detecting the pulse repetition frequency of incoming pulse trains, determining when a particular pulse repetition frequency is present as a majority in a pulse train for a preset time and locking onto and continuously tracking the particular pulse repetition frequency.

3,706,936
SELECTIVELY SWITCHED MULTI PURPOSE ELECTRICAL FILTER

Earl H. Krohn, Brookline, Mass., assignor to Krohn-Hite Corporation, Cambridge, Mass.

Filed Oct. 28, 1970, Ser. No. 84,566
Int. Cl. H03f 3/04
U.S. Cl. 330—21 **9 Claims**

A universal electronic filter includes a high pass section with an adjustable high cutoff frequency, a low pass section with an adjustable low cutoff frequency and a switching arrangement for interconnecting the two sections to provide high pass operation, low pass operation, band pass or band reject operation, all with adjustable cutoff frequencies. The high pass section includes means for adjusting the gain on one output while keeping it constant on another and applying the output from the constant gain portion to a shunt section to peak at a corner frequency without the peak changing as the gain is adjusted. In the low pass section there is a PNP stage in

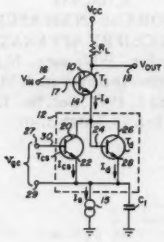


cascade with an NPN stage with the same number of PNP's as NPN's to cancel d-c drift. In both low and high pass sections the degree of feedback is varied with change in slope. In the low pass section feedback to both collector and emitter with the feedback to the emitter through a capacitor helps keep the section operating at higher frequencies.

3,706,937
GAIN CONTROLLED AMPLIFIER FOR INTEGRATED CIRCUIT APPLICATIONS

John E. Hanna, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 3, 1970, Ser. No. 94,683
Int. Cl. H03g 3/30
U.S. Cl. 330—28 **8 Claims**



A gain controlled amplifier circuit in which the amplifying element, such as a transistor, has its emitter-collector circuit connected to a gain control circuit which supplies a constant operating current and changes its AC impedance in accordance with an AGC signal. The gain control circuit includes a first branch having an impedance which varies with the externally applied AGC signal and a second branch having an impedance which varies with the current flow therethrough and which is connected to ground through an AC bypass. These two branches are connected in parallel to a constant current source so that the impedance of the first branch controls the current flow in the second branch and thereby its impedance.

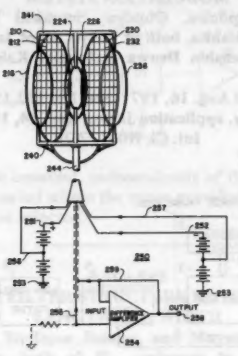
3,706,938
DIRECTIONAL ION ANEMOMETER

Andrew Petriw, West Belmar, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed March 10, 1971, Ser. No. 122,895
Int. Cl. G01m 27/00, 27/62
U.S. Cl. 324—33 **1 Claim**

This disclosure relates to anemometers and particularly to ion anemometers. More particularly, this disclosure relates to a directional, ion anemometer where an alpha nuclear radiation source is positioned between two electrodes of opposing

polarity in a balanced electrical field. The ion cloud concentration generated by the radiation source is changed by mo-



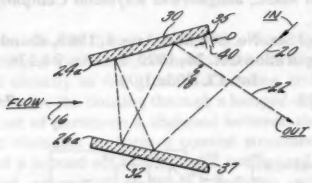
tion of the air to cause a differential voltage or current, between the source and the electrodes, proportional to the wind velocity.

3,706,939

DIFFRACTION COMPENSATED MIRROR FOR LASER AMPLIFIER

George H. McLafferty, Manchester, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 16, 1970, Ser. No. 11,717
Int. Cl. H01s *3/05*
U.S. Cl. 330—4.3 **2 Claims**



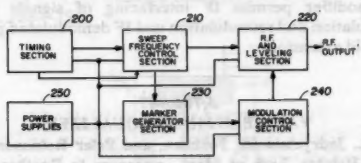
Mirrors used in multi-pass laser amplifiers are compensated for diffraction of electromagnetic radiation, caused by abrupt surface transitions at the mirror edges, by rounding of the mirror edges.

3,706,940

HIGH FREQUENCY SWEEP GENERATOR

Jerry Hausner, Flushing, N.Y., assignor to The Narda Microwave Corporation, Plainview, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,779
Int. Cl. H03b *23/00*
U.S. Cl. 331—76 **17 Claims**



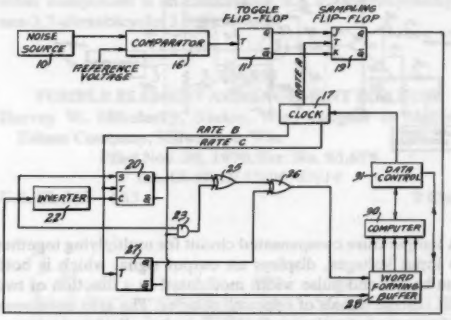
A broad band high frequency sweep generator operating in the gigahertz range. A basic oscillator sweeps a band at the lower region of this range and a frequency amplifier is used to select harmonics for the upper frequencies of the band. Unique amplification and control circuitry is employed to obtain consistent power output and high resolution frequency coverage.

3,706,941

RANDOM NUMBER GENERATOR

Charles E. Cohn, Clarendon Hills, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 28, 1970, Ser. No. 84,674
Int. Cl. H03b *29/00*
U.S. Cl. 331—78 **3 Claims**



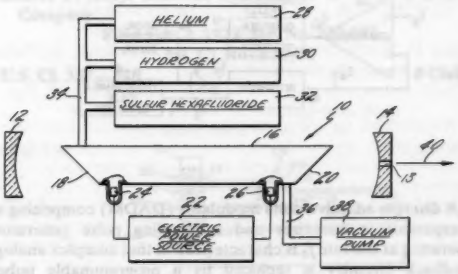
A physical noise source is used to develop a first sequence of random bits. A second sequence of random bits is formed from the first sequence by comparing the bits in each pair of bits of the first sequence. Every other bit of the second sequence is complemented to form a sequence of random numbers. The random numbers can be combined to form words.

3,706,942

PULSED HYDROGEN FLUORIDE LASER

Casper J. Ultee, Glastonbury, Conn., assignor to United Aircraft Corporation, Hartford, Conn.

Filed July 17, 1970, Ser. No. 55,712
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 G **1 Claim**

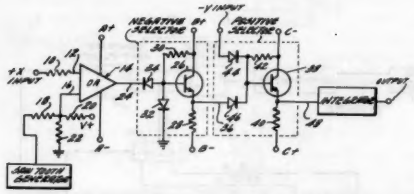


A hydrogen fluoride gas laser produces output pulses of relatively long duration and high power by the addition of helium to the interacting gases. Various fluorine-containing gas molecules enclosed in an optical cavity are caused to break down by the intermittent discharge of an electric discharge across the gas, providing fluorine atoms which react with hydrogen molecules to form vibrationally excited hydrogen fluoride in the presence of helium atoms; the excited hydrogen fluoride molecules emit laser energy in the 2.7 to 3 micron range.

3,706,943
MODULATING CIRCUIT

Vernon R. Duncan, Erlanger, Ky., and Louis L. Owen, West Chester, Ohio, assignors to General Electric Company

Filed Oct. 20, 1971, Ser. No. 190,748
Int. Cl. H03k 7/10
U.S. Cl. 332—9 T 8 Claims

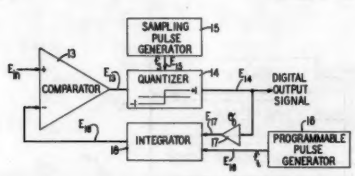


A temperature compensated circuit for multiplying together two input voltages, displays an output signal which is both pulse height and pulse width modulated as a function of two input voltage signals of opposite polarity. The area enveloped by the output signal may be integrated to display an output voltage potential representative of the multiplication of the two input signals.

3,706,944
DISCRETE ADAPTIVE DELTA MODULATOR

Stuart Keene Tewksbury, Long Branch, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 2, 1970, Ser. No. 94,458
Int. Cl. H03k 13/22
U.S. Cl. 332—11 D 13 Claims

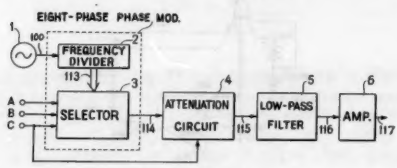


A discrete adaptive delta modulator (DADM) comprising a comparator, a quantizer and a sampling pulse generator operating at the rate f_s is characterized in that complex analog feedback circuitry is replaced by a programmable pulse generator operating at the rate f_t, which provides a controlled number of pulses k during each sampling period $1/f_s$ to a single step-size analog feedback integrator. The number of pulses k provided by the programmable generator multiplied by the basic step size σ_o of the feedback integrator determines the step-size σ_k in the feedback signal. This DADM is readily implemented in integrated circuit form and retains such advantages of the nonadaptive delta modulator as circuit simplicity and the requirement of only a single adjustable basic step size σ_o. The number n of available step sizes σ_k, which is determined by the ratio of the generator rates f_t and f_s, can be several hundred compared to a maximum of ten in a conventional DADM.

3,706,945
AMPLITUDE-MODULATED EIGHT-PHASE PHASE-MODULATION SYSTEM

Hidetaka Yanagidaira, Ohmiya; Sotokichi Shintani, and Hisakichi Michishita, both of Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed Aug. 16, 1971, Ser. No. 172,150
Claims priority, application Japan, Aug. 14, 1970, 45/71226
Int. Cl. H04l 27/20
U.S. Cl. 332—17 6 Claims

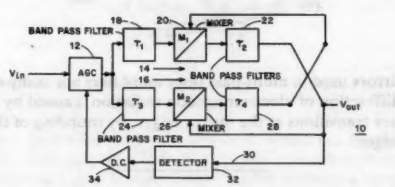


A multiple modulation system for obtaining an amplitude-modulated eight-phase phase-modulated wave employed for transmitting three channels of binary information, in which the amplitude of an eight-phase phase-modulated wave is deviated by substantially six decibels when the eight-phase phase-modulated wave assumes any of four phase-positions alternately predetermined from possible eight-phase positions.

3,706,946
DEVIATION MODIFIER

William J. Bickford, Weston, and Richard G. Cease, Westwood, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 846,854, Aug. 1, 1969, abandoned.
This application Oct. 26, 1970, Ser. No. 84,126
Int. Cl. H03c 3/06
U.S. Cl. 332—23 7 Claims



A deviation modifier which utilizes the principle of synthetic phase isolation to extend or reduce the deviation on an incoming F.M. or P.M. signal. The modified deviation signal is then filtered and demodulated or interfaced at IF. This modifier permits IF interfacing of signals without demodulation and remodulation and IF demodulated provides threshold extension.

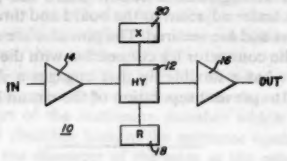
3,706,947
VARIABLE PHASE EQUALIZER

Jerzy L. Jedrychowski, Foxboro, and Peter Robinson, Needham Heights, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 821,188, April 2, 1969, abandoned.
This application Dec. 7, 1970, Ser. No. 95,943
Int. Cl. H03h 7/34, 7/36; H01p 5/14
U.S. Cl. 333—28 R 7 Claims

A variable phase equalizer employing a hybrid network wherein one of the pairs of opposite hybrid terminations is used as input and output and the second pair of hybrid ter-

minations has a variable reactance in one arm and a resistance in the opposite arm. This equalizer has the advantage that its



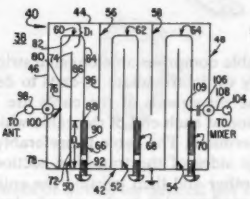
insertion loss is constant, independently of the reactive components to be varied within the range provided with no restriction on the value selected.

3,706,948

COMB-LINE FILTER STRUCTURE HAVING REDUCED LENGTH AND WIDTH

Charles Choi, Hoffman Estates, and Maynard H. McGhay, Schaumburg, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 18, 1971, Ser. No. 116,376
Int. Cl. H01p 1/20, 7/04
U.S. Cl. 333—73 C 12 Claims



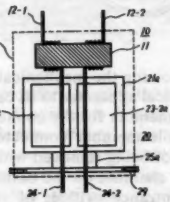
The comb-line filter is formed by a housing and a plurality of U-shaped resonator elements each having one end connected directly to the grounded housing and the other end connected to the housing through a lumped capacitor. Each of a first set of partitions is disposed between the legs of the U-shaped elements to form a coaxial structure therewith and each of a second set of partitions is disposed either between adjacent resonator elements, between adjacent lumped capacitors, or between an adjacent resonator element and lumped capacitor to control the coupling between resonant cells.

3,706,949

HIGH FREQUENCY FILTER

Takaya Kawakami; Toshinori Kitamura; Yoshio Ajichi, and Masayoshi Ono, all of Kyoto, Japan, assignors to Nichicon Capacitor, Limited, Kyoto, Japan

Filed Feb. 9, 1971, Ser. No. 114,010
Claims priority, application Japan, Feb. 17, 1970, 45/15501; Feb. 17, 1970, 45/15502; Feb. 17, 1970, 45/15503; Feb. 17, 1970, 45/15504
Int. Cl. H03h 7/04
U.S. Cl. 333—79 5 Claims



A high frequency filter having a feed-through capacitor and inductances, the latter being wound on a single magnetic core and precisely positioned relative to the capacitor.

3,706,950

PROTEIN ADHESIVE COMPOSITIONS

John T. Stephan, Longview, and A. J. Golick, Seattle, both of Wash., assignors to Commercial Solvents Corporation, New York County, N.Y.

Division of Ser. No. 815,197, April 10, 1969, Pat. No. 3,640,740. This application Jan. 18, 1971, Ser. No. 107,434
Int. Cl. B32b 21/00, 29/00; C09j 3/18
U.S. Cl. 156—336 1 Claim

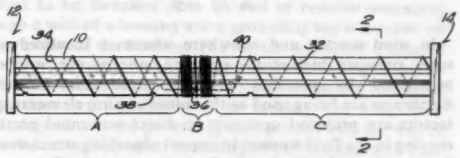
An adhesive composition having particular utility for the manufacture of laminated cellulosic products wherein one component is an aqueous alkali-dispersed protein and the other component is an oxazolidine, e.g. (5-hydroxymethyl-1-aza-3,7-dioxabicyclo[3,3,0]octane).

3,706,951

FUSIBLE ELEMENT ARRANGEMENT FOR FUSE

Harvey W. Mikulecky, Racine, Wis., assignor to McGraw-Edison Company, Milwaukee, Wis.

Filed Nov. 30, 1970, Ser. No. 93,679
Int. Cl. H01h 85/06, 85/14
U.S. Cl. 337—163 9 Claims



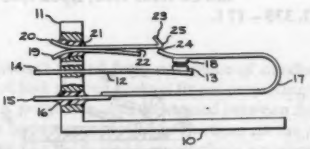
A low ampere current limiting fuse includes a fusible element spirally wound on an elongated, cruciform in cross section support and carrying an M-spot. The turns of the fusible element are wound on a smaller or tighter pitch in the area of the M-spot to locate a relatively large number of turns in the area of the M-spot so that heat generated in the fusible element is concentrated in the area of the M-spot. An indicator wire is also spirally wound on the cruciform support and passes between the smaller pitch turns and the support. A cement holds the indicator wire away from the fusible element and also engages and holds the smaller pitch turns.

3,706,952

AUTOMATICALLY RESETTABLE THERMAL SWITCH

Robert P. Alley, Danville, Ill., assignor to General Electric Company

Filed Feb. 2, 1972, Ser. No. 222,951
Int. Cl. H01h 37/52
U.S. Cl. 337—348 5 Claims



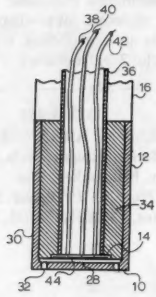
A thermal switch is provided which uses a bimetal element to provide the force to open and close a set of contacts. The bimetal element is initially restrained from opening the contacts by a latch mechanism which uses an eutectic material for determining the temperature at which the latch mechanism will release. Upon a sufficient drop in the ambient temperature, sufficient force is generated in the bimetal element to cause the bimetal to slip past a shaped surface on the latch mechanism thereby resetting of the switch.

3,706,953

PARTICLE IMPACT PROTECTORS AND ASSEMBLIES THEREOF FOR PRESSURE SENSING TRANSDUCERS HAVING DIAPHRAGMS

John C. Kicks, and Howard P. Louth, both of Seattle, Wash., assignors to Kulite Semiconductor Products, Ridgefield, N.J.

Filed May 7, 1970, Ser. No. 34,877
Int. Cl. G01l 7/08
U.S. Cl. 338—4 9 Claims



In wind tunnels and elsewhere whenever localized pressures, pressure fluctuations, pressure patterns, etc., are being monitored by pressure sensing transducers in which diaphrams are being used as the initial sensing elements, protectors are provided upstream to direct unwanted particles moving in the fluid streams to impact absorbing structures before reaching the diaphrams Such protectors in their assemblies are arranged in reference to the diaphragms so the directional changes of the fluid streams will not interfere with the accuracy of the observed and/or recorded pressures.

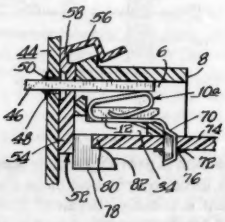
In a preferred embodiment of a protected pressure transducer having such a flexible diaphragm as the pressure sensing means, the diaphragm is mounted within a tubular housing which incorporates a protector plate fitted across the entire cross-sectional area of the tubular housing and it is formed with a plurality of holes near its circumference with all these holes being radially spaced beyond the circumference of the diaphragm to direct the fluid stream, possibly carrying particles, to energy absorbing structure located radially beyond the circumference of the diaphragm.

3,706,954

CONNECTOR AND ARRANGEMENT FOR CIRCUIT BOARD ASSEMBLY THEREWITH

Kerry M. Krafthefer, Downers Grove, Ill., assignor to Molex Incorporated, Downers Grove, Ill.

Continuation-in-part of Ser. No. 57,689, July 23, 1970. This application Dec. 28, 1970, Ser. No. 101,468
Int. Cl. H01r 9/08; H05k 1/02
U.S. Cl. 339—17 L 16 Claims



An electrical connector has a series of terminals therein each with a tongue that projects from the connector, the tongue being soldered to a circuit board. The connector has depending ledges which support an edge portion of the circuit board remote from the soldered connection to resist rupture of the soldered connection upon bending of the circuit board. In another arrangement a circuit board has pin conductors and a lock wafer adjacent to the board and through which the pins project and are secured. The pins also are adapted to project into the connector for connection with the terminals. The lock wafer has a flexible lip that engages a shoulder on the connector to prevent separation of the circuit board and connector.

3,706,955

ELECTRICAL CABLE HAVING INTEGRAL TERMINALS

Edward Dennman Bunnell, Palm Harbor, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed April 28, 1971, Ser. No. 138,162
Int. Cl. H01r 11/00
U.S. Cl. 339—28 9 Claims

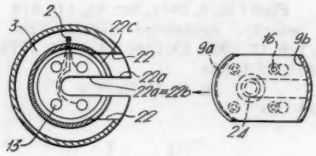
Electrical cable comprises an elongated strip of sheet metal which is axially slit intermediate its ends to define a plurality of strands. The slit strands of the cable are integral with a transition section at each end of the cable which in turn is integral with a terminal. The cable is preferably manufactured by forming the sides of the transition section inwardly and towards each other and then twisting the entire cable to impart a helical configuration to the strands. Insulation may be provided by dipping the intermediate portion of the cable into a plastisol which hardens on the surface of the strands, which penetrates between the strands, and which seals the ends of the cable.

3,706,956

JOINT DEVICE FOR A DISCONNECTABLE MECHANICAL AND ELECTRIC CONNECTION OF AN ELECTRIC LIGHT PENDANT OR OTHER SUSPENDED ELECTRIC APPARATUS, TO A CARRYING MEANS

Corrado Epifani, Via Benaducci, 26-Foligno, and Luigi Pucci, Via Flaminia Vecchia, Frazione S. Eraclio, both of Italy

Filed Dec. 21, 1970, Ser. No. 100,262
Int. Cl. H01r 13/62
U.S. Cl. 339—66 M 4 Claims



A device for joining the mechanical and electrical connections of an electrical apparatus to its carrying assembly including a stationary member fixedly connected to the carrying assembly, a movable member connected to the electrical apparatus capable of being removed with said apparatus and including an inner chamber on the bottom of which are located a plurality of entrance orifices of vertical electric sockets together with vertical guiding grooves, the movable member comprising a contact disk, from the lower surface of which projects downwardly a plurality of vertical metal pins so spaced therebetween as to be able to enter the respective

sockets arranged in the stationary joint member, a peripheral flange adapted to be engaged by the guiding grooves to define the correct mutual positioning between the stationary and movable members in operation, the inner chamber having a height higher than the total height of the contact plug including the pins and communicating with the outside by means of an entrance opening having a width equal to that of the plug, while at the part of the stationary member which is placed below the inner chamber bottom the entrance opening has a width equal to the diameter of the stem at the other end of which is fixed the contact plug, the stem having at its lower end a sleeve provided with an inner vertical threaded hole in which is screwed the threaded end of the pendant stem, the sleeve forming an outer projection with respect to the lower stem and adapted be held by a fork-like means mounted at the upper end of a stick.

3,706,957

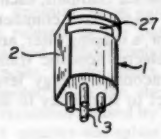
FASTENING SYSTEM

James Iantorno, Mamaroneck, N.Y., assignor to Sealectro Corporation, Mamaroneck, N.Y.

Filed June 17, 1970, Ser. No. 46,962

Int. Cl. H01r *13/48*

U.S. Cl. 339—126 R **3 Claims**



A fastening system or device for general use in a variety of applications such as panels, doors, and general cover fastenings, but with special advantages in transistor sockets, bushings, terminals and spacer mountings.

This invention is also suitable for use in ¼ turn fasteners. Specifically, the invention comprises an irregularly shaped opening in a base or mounting plate and a corresponding irregular shape in a complementary piece permitting the piece to pass through the opening securely locking the two elements together when relative motion occurs.

3,706,958

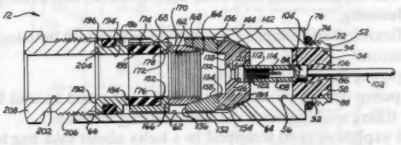
COAXIAL CABLE CONNECTOR

John P. Blanchenot, Agincourt, Ontario, Canada, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 28, 1970, Ser. No. 84,792

Int. Cl. H01r *17/04, 7/06*

U.S. Cl. 339—177 E **6 Claims**



A coaxial cable connector for securing the inner and outer conductors of the cable. A connector housing has a radially deformable inner conductor seizing member, a radially deformable outer conductor seizing member and a radially deformable contact member interconnecting the inner conductor seizing member and the outer conductor seizing member. A gland nut is rotated in the housing, thereby applying an axial force to the seizing members and causing the inner conductor and the outer conductor seizing members to contract radially, while simultaneously causing the contact member to expand.

3,706,959

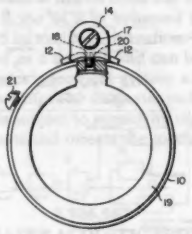
GROUND CONNECTOR FOR CONDUIT

Alexander R. Norden, New York, N.Y., assignor to O. Z. Electrical Manufacturing Company, Inc., New York, N.Y.

Filed April 8, 1971, Ser. No. 132,462

Int. Cl. H01r *3/06*

U.S. Cl. 339—14 R **9 Claims**



A grounding device is disclosed wherein a bushing is adapted to be threaded onto an end of conduit extending through a wall of a housing and a grounding lug is secured on the periphery of the bushing. The lug has a resilient C-shaped wire clamping portion and resilient wings extending from opposite ends thereof formed so as to provide spring tensioned connections to the periphery of the bushing. The wings have teeth adapted to make grounding connections with the wall of an enclosure or box upon threading of the bushing onto conduit extending through the enclosure, additionally providing anti-turning means to prevent the lug from rotating on its mounting screw.

3,706,960

FORK-SHAPED ONE-PIECE ELECTRICAL SPRING CONTACTS

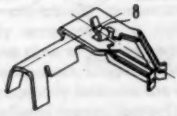
Hans August Herbert Grenda, D-7758 Meersburg, Germany, assignor to W. Holzer & Co. KG, Meersburg, Bodensee, Germany

Filed March 29, 1971, Ser. No. 128,840

Claims priority, application Germany, March 28, 1970, G 70 11 611.9

Int. Cl. H01r *11/22*

U.S. Cl. 339—258 **8 Claims**



An electrical contact folded from one piece of conductive sheet having sets of fork shaped contact finger projecting from the folded body. A projecting tongue located between fingers on one side of the body engaged with projections on the other side of the body holding the folded body portions juxtaposed.

3,706,961

AUTOMATIC ALARM SYSTEM

Kaku Sugiura, Machida-shi, Tokyo, Japan, assignor to Nippon Electronics Co., Ltd., Tokyo, Japan

Filed March 10, 1970, Ser. No. 18,216

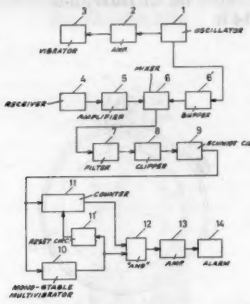
Claims priority, application Japan, May 2, 1969, 44/33558; July 9, 1969, 44/53741

Int. Cl. G08b *13/16*

U.S. Cl. 340—1 R **2 Claims**

An automatic alarm system for detecting trespasser and the occurrence of fire is provided which is arranged to direct an

ultrasonic wave into the space to be covered and to receive the wave reflected from a moving object to be detected. By Doppler effect, the received wave is shifted in frequency from the frequency of the emitted wave, and hence both waves are fed to a mixer to produce an electrical signal indicative of the



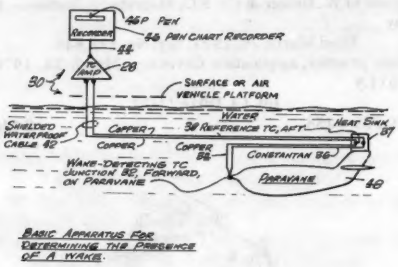
frequency shift. This signal is clipped at an adjustable level, and part of the clipped waveform above that level is shaped into a pulse. Successive pulses are supplied to an accumulator means which produces an output to operate an alarm unit only when a number of pulses in excess of a given value occurs within a predetermined time period.

3,706,962

APPARATUS FOR DETERMINING THE PRESENCE OF A VESSEL BY DETECTING ITS WAKE

Joseph P. Strapp, Glendora, and Neri E. Cornford, Pasadena, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed March 5, 1971, Ser. No. 121,421
Int. Cl. G01k 7/12
U.S. Cl. 340—4 R **10 Claims**



BASIC APPARATUS FOR DETERMINING THE PRESENCE OF A WAKE.

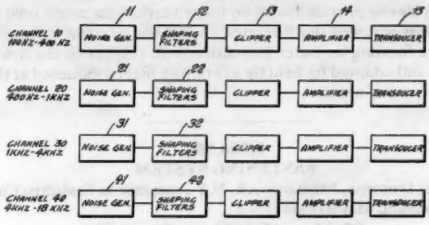
Apparatus for determining the presence of a vessel, such as a submarine in the ocean, by detecting its wake, comprising a test thermocouple (TC) junction connected to a length of two thermocouple conductors, and a heat sink, into which the free ends of the conductors are immersed, to form a reference thermocouple junction. An electrical instrument, such as a pen chart recorder, is connected to the free ends of the two conductors, the pen of the instrument being adapted for setting to a reference level, generally zero, when the voltage across the two conductors is constant, indicating that the test TC junction is in an environment where the temperature of the water is static. A submersible tow is used capable of being towed by a vehicle, generally a surface vessel. The test TC junction is mounted on the submersible tow, and thus monitors the temperature of the water, whereby a marked deviation in the temperature of the water from its static value, which indicates the presence of the wake of the vessel, is detectable on the scale of the electrical instrument by a corresponding deviation in the reading of the instrument from the reference level reading.

3,706,963

ACOUSTIC TARGET SOURCE

Wallace C. Norstrom, Waterford, and Albert W. Welles, Mystic, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 7, 1970, Ser. No. 78,715
Int. Cl. H04b 11/00
U.S. Cl. 340—5 D **2 Claims**



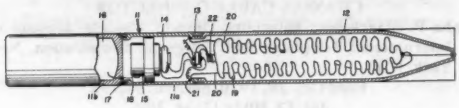
A plurality of separate channels, each generating a different acoustic frequency band, have connected, in tandem, a random noise generator, a shaping filter, an amplitude clipper, an amplifier and an electro-acoustic transducer. The resulting overall projected acoustic energy level can be selectively shaped with respect to frequency to simulate various target sources.

3,706,964

EXPANDING DEEP WATER SOUND SOURCE VEHICLE

Oscar R. Vass, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 31, 1964, Ser. No. 393,269
Int. Cl. F42b 3/00
U.S. Cl. 340—5 R **8 Claims**

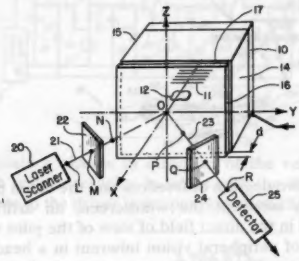


1. An expandable deep water sound source comprising:
a housing,
a flexible bag collapsed and folded within said housing,
a motor,
a power source for said motor,
a pump driven by said motor and connected to said bag for filling said bag with the surrounding medium,
an explosive cord wrapped in a helix about said bag to form a helical charge when said bag has been filled and thereby expanded to a substantially cylindrical-shaped configuration,
means for releasing the bag from said housing and for starting said motor after the housing has reached a preset depth,
means connecting the bag and the power source, whereby the power source may act as a balance weight for supporting the expanded bag in a horizontal position as the bag and power source continue to sink in the water,
and means for detonating the explosive cord at a predetermined depth.

3,706,965
REAL-TIME ACOUSTIC IMAGING SYSTEM

Adrianus Korpel, Prospect Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 4, 1971, Ser. No. 169,019
Int. Cl. G01n *29/00*
U.S. Cl. 340—5 MP **8 Claims**

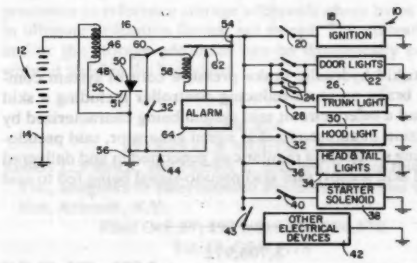


To produce an acoustic image or hologram of an object irradiated by acoustic waves, a system includes a sheet of elasto-optically anisotropic material that responds to the acoustic waves by exhibiting unequal strain-optic coefficients in orthogonal directions related to the path of the acoustic waves. A linearly polarized monochromatic beam of light is projected toward a point in the sheet, while a detector responds to light reflected from the sheet and develops a signal that represents variations caused by the sheet. Disposed in the light path is a quarter-waveplate that converts the original linear polarization into circular polarization. A polarization analyzer, disposed in the light path beyond the sheet and between the quarter-waveplate and the detector, is oriented to select a polarization component of the light that exhibits an amplitude modulation component at the frequency of the acoustic waves.

3,706,966
AUTOMOTIVE BURGLAR ALARM HAVING BATTERY CURRENT FLOW DETECTOR

Richard T. So, Chicago, and Reinhold Mueller, Arlington Heights, both of Ill., assignors to Solidyne Corp., Arlington Heights, Ill.

Continuation-in-part of Ser. No. 811,967, April 1, 1969, abandoned. This application Dec. 7, 1970, Ser. No. 95,829
Int. Cl. B60r *25/10*
U.S. Cl. 340—63 **16 Claims**

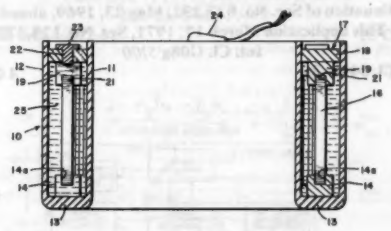


An alarm device is energized when any current is drawn from the battery employed in the electrical system of the automotive vehicle. The onset of battery current is utilized to produce a voltage pulse, which is employed to trigger a silicon controlled rectifier. The rectifier energizes a relay coil which operates relay contacts connected to the alarm device. The voltage pulse preferably is produced by a magnetic pickup coil mechanically coupled to the battery cable of the electrical system. In a second embodiment, the instantaneous battery voltage is compared with the stable voltage across a capacitor charged to the initial battery voltage. Any drop in the instantaneous voltage produces a voltage pulse which triggers the electronic switch. In a third embodiment, two of the leads to the silicon controlled rectifier are connected to the negative battery cable between the negative battery terminal and ground, between which an SCR triggering voltage drop develops when current is drawn from the battery. In each of the embodiments, if the SCR is bypassed initially, it is connected to be latched by avalance operation. The burglar alarm can be encapsulated as a module and can be coupled electrically into the vehicles' electrical system easily, without any splicing of existing wiring. The magnetic pickup coil of the primary embodiment is subject to sensitivity regulation by way of a clamp which mounts and orients the module with respect to the battery cable.

3,706,967
UNDERWATER ACOUSTIC PROJECTOR

Nicholas Renna, Jr., Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 21, 1971, Ser. No. 108,488
Int. Cl. H04b *13/02*
U.S. Cl. 340—10 **7 Claims**



A high efficiency, broadband acoustic projector for deep water applications in excess of twelve thousand feet. The projector comprises an active element consisting of a plurality of piezoelectric staves electrically connected in series. The staves are physically arranged in a cylindrical assembly prestressed in a fibrous glass wrapping, and installed in an annular, acoustically transparent, neoprene boot. Air-exhausted oil fills the boot to completely immerse the active element and thereby couple the radiated energy thereof to the surrounding water. The center cavity of the projector is open at both ends for free-flooding. Broadband response is achieved by close-coupling the active element's cavity and hoop resonances whereby they reinforce each other across a broad range of operating frequencies.

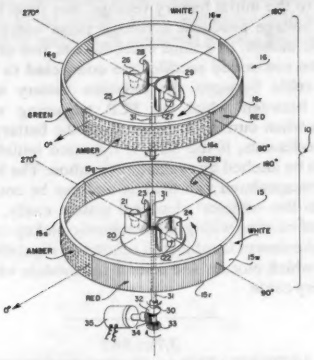
3,706,968
BEACON PROVIDING VISUAL DIRECTION INFORMATION

Charles J. Turner, Jr., Atlanta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Nov. 20, 1970, Ser. No. 91,260
Int. Cl. G08g *5/00*
U.S. Cl. 340—25 **14 Claims**

An anti-collision beacon for aircraft or other applications. A pair of coaxially displaced filters are sequentially illuminated to provide flashes of light which uniquely identify the quadrants of the filter relative to the position of an observer.

The time at which a particular color flash occurs, in relation to the preceding and succeeding contrasting color flashes, varies



proportionately to the viewing angle within each quadrant. Another embodiment of this filter provides visual aircraft landing glide-slope information.

3,706,969

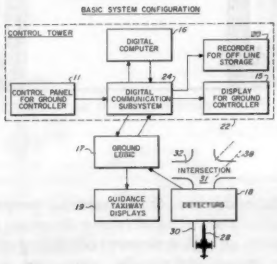
AIRPORT GROUND AIRCRAFT AUTOMATIC TAXI ROUTE SELECTING AND TRAFFIC CONTROL SYSTEM

Candelario Paredes, Dallas, Tex., assignor to Forney Engineering Company, Dallas, Tex.

Continuation of Ser. No. 827,292, May 23, 1969, abandoned. This application March 17, 1971, Ser. No. 125,372

Int. Cl. G08g 5/00

U.S. Cl. 340—26 **4 Claims**



As an identified object, such as an aircraft on the ground is scheduled to cross the surface traffic network of certain areas, such as an airport, its identification and point of destination on the ground are fed to an automatic digital computerized controller comprising integrated intersection traffic control and monitoring logic units, which automatically generates a selected route from the point of origin of the object to such destination point, and by appropriate guidance displays including such identification, directs the pilot or driver of the object at each traffic intersection when safely to enter and in which direction to proceed, until the object reaches the desired destination point.

3,706,970

HEAD-UP ATTITUDE DISPLAY

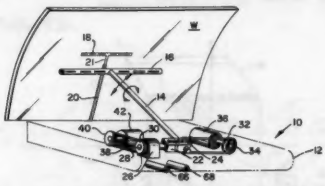
William J. O'Keefe, Dedham, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed May 12, 1970, Ser. No. 36,534

Int. Cl. G08g 5/00

U.S. Cl. 340—27 AT **2 Claims**

An aircraft instrument providing a head-up attitude display. The instrument provides a pitch and roll attitude reference coincident with the true horizon in a pilot's actual field of view through a cockpit windscreen. The principal indicator is a movable, horizontal baton which is driven from a standard gyroscopic attitude reference. The baton has two degrees of freedom, one up and down in the vertical plane for pitch attitude changes and a tilting movement for roll attitude



changes. With the two degrees of freedom and the baton positioned immediately adjacent the windscreen, an artificial horizon is provided in the direct field of view of the pilot with all the advantages of peripheral vision inherent in a head-up system. The batons are illuminated to accentuate the image of the batons in the peripheral vision of the pilot.

3,706,971

BRAKE CONTROL ARRANGEMENT

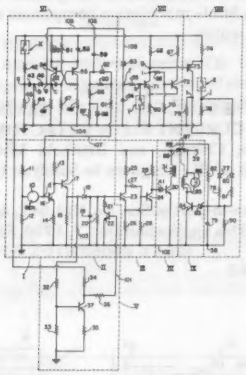
Tosiaki Okamoto, Kariya; Koziro Mori, Okazaki; Hayao Yamazaki, Osaka; Takao Abu, Osaka, and Takefumi Sato, Osaka, all of Japan, assignors to Aisin Seiki Company Limited, Kariya-shi and Sharp Corporation, Osaka, Japan

Filed April 2, 1970, Ser. No. 25,065

Claims priority, application Japan, April 5, 1969, 44/26297; April 18, 1969, 44/30643

Int. Cl. B60t 17/22

U.S. Cl. 340—52 B **8 Claims**



An antiskid hydraulic brake pressure control system comprising a brake pressure reducing controller including a skid sensor; and a safety circuit said system being characterized by the provision of an pseudo-skid signal generator, said pseudo-signal being similar to a regular one generated in and delivered from said skid sensor, said skid pseudo-signal being fed to said sensor.

3,706,972

DIRECTION INDICATOR FOR AUTOMOBILE

Seiichi Okuhara, 3-5-7, Yoyogi, Shibuya-ku, Tokyo, Japan

Filed April 23, 1971, Ser. No. 136,847

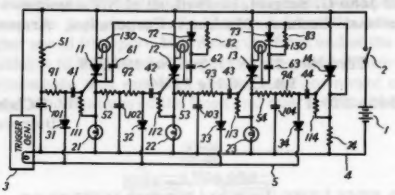
Claims priority, application Japan, April 30, 1970, 45/36322

Int. Cl. B60q 1/38

U.S. Cl. 340—82 **4 Claims**

A direction indicator for automobiles having a negative grounded battery and utilizing semiconductor circuits for the

control of two or more sets of lights individually with the lights of each set being operated in sequence or simultaneously to



indicate a change in direction of the vehicle and relatively high resistance lights in series with the direction lights to indicate to the driver improper operation of the circuit.

3,706,973

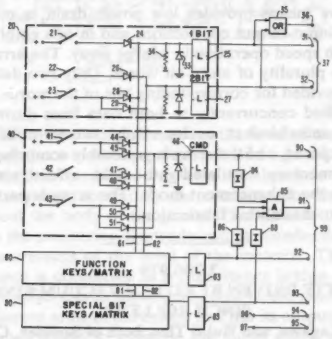
DYNAMIC KEYBOARD DATA ENTRY SYSTEM

Edward W. Acquadro, and Donald F. Monahan, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,241

Int. Cl. H04l 3/00; G06c 21/00

U.S. Cl. 340—172.5 **8 Claims**



Actuation of a key on a keyboard generates double bytes of binary information, one byte identifying the keyboard area in which the key is located and the other byte representing a weighted key code. These two bytes are utilized by a data processor to reference storage addresses where bytes encoded in ultimate utilization format are stored. The utilization code and/or the storage addresses can be dynamically converted without altering the keyboard.

3,706,974

INTERFACE MULTIPLEXER

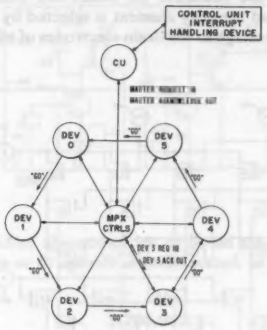
Robert L. Patrick, and Patrick L. Rickard, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1971, Ser. No. 194,078

Int. Cl. G06f 9/18

U.S. Cl. 340—172.5 **6 Claims**

A plurality of devices any one of which can request service by a central controlling unit are interconnected in a loop arrangement by an enabling line. The controlling unit is effectively coupled in parallel to all the devices so that the presence of a service request by one of them will immediately initiate operations that will result in one of the devices being granted service. Each device includes logic circuitry to force it to actuate its leg of the enabling line loop if it was the device granted last service or if it does not have a service request present. The connection of the device to the controlling unit results only if it has a service request and receives an enabling line signal from the device preceding it on the loop. Means for bypassing



device requests to read high priority requests can be included as can means to initiate data gating overlapping with the establishing of the servicing connection.

3,706,975

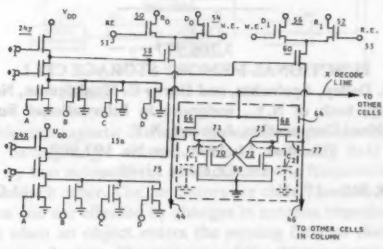
HIGH SPEED MOS RANDOM ACCESS MEMORY

Robert J. Paluck, Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 9, 1970, Ser. No. 79,584

Int. Cl. G11c 11/40

U.S. Cl. 340—173 FF **15 Claims**



Disclosed is a high speed insulated gate field effect transistor random access memory circuit integrated on a monolithic chip. The memory circuit utilizes a low voltage decoding circuit that is compatible with transistor-transistor-logic circuit output levels, enabling a reduction in the number of discrete MOS devices required for each memory cell. Also disclosed is a novel method for decoding wherein all of the lines of the memory matrix are brought high at the start of each cycle, recharging the internal capacitance of all of the memory cells of the matrix. All of the undesired lines of the memory matrix are then discharged through an OR circuit arrangement connected in series with each line, thereby disconnecting all but a preselected cell of the memory matrix from the computer input/output sense lines.

3,706,976

THREE-DIMENSIONAL SELECTION TECHNIQUE FOR VARIABLE THRESHOLD INSULATED GATE FIELD EFFECT TRANSISTOR MEMORIES

Robert E. Oleksiak, Carlisle, Mass., assignor to Sperry Rand Corporation

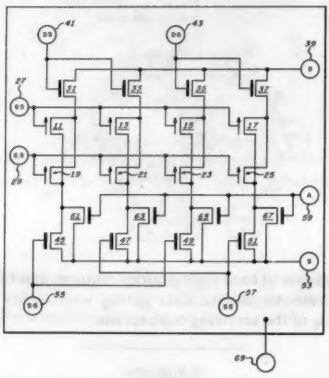
Filed Nov. 5, 1970, Ser. No. 87,140

Int. Cl. G11c 11/40, 5/06

U.S. Cl. 340—173 R **9 Claims**

A memory array is made up of rows and columns of memory elements. Each memory element includes a known type of

variable threshold insulated gate field effect transistor characterized by electrically controllable conduction thresholds established by potentials applied between the respective gate electrodes and the substrate on which the transistors are formed. A desired memory element is selected by first applying an enabling voltage to the drain electrodes of all transistors



in a group of columns including the column containing the desired element. A second enabling voltage is then applied to the gate electrodes of all transistors in the row containing the desired memory element. A third voltage applied to the column containing the desired transistor and the corresponding columns in each group of columns selects the desired transistor.

3,706,977

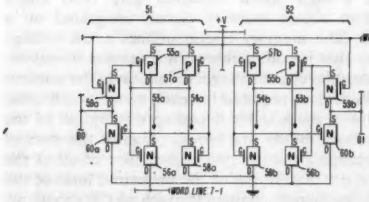
FUNCTIONAL MEMORY STORAGE CELL

Jack R. Dailey, Apalachin, and Harry C. Kuntzleman, Newark Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 11, 1971, Ser. No. 197,908

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 R **16 Claims**



An improved four-state (0, 1, X, Y) functional memory cell is disclosed which requires only two data lines (B0, B1) for writing data into, searching, and reading data out of the cell. The cell comprises a pair of latches, each preferably fabricated in complementary insulated gate field effect transistors operated in the enhancement mode. During read, write and search operations, data is applied concurrently to both data lines. The cell requires only a two-terminal power supply, assures low power drain, occupies minimum silicon area and in one embodiment provides high cell isolation permitting large, high performance arrays.

The improved latch structure can also be used as a two-state associative memory storage cell.

3,706,978

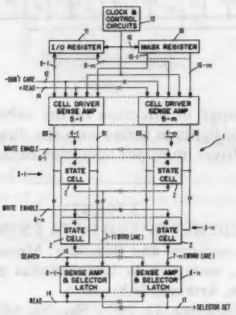
FUNCTIONAL STORAGE ARRAY

Jack R. Dailey, Apalachin; Harry C. Kuntzleman, Newark Valley, and John G. Surgent, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 11, 1971, Ser. No. 197,909

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 R **7 Claims**



A functional (content addressable, four-state) storage unit including an improved four-state (0, 1, X, Y) cell and improved drive means provides low power drain, a minimum number of input-output connections and in one embodiment reliable high speed operation in a large array. The array is arranged in a plurality of multi-bit words. Only two data input lines are provided for corresponding bits of the words. Binary data is applied concurrently to both data lines during read, write and search/select cycles. Only two-terminal power supply is required, and the array is preferably comprised solely of complementary insulated-gate field effect transistors operated in the enhancement mode. The array is particularly well suited to monolithic fabrication.

3,706,979

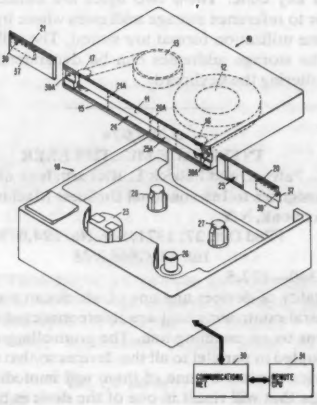
CASSETTE DRIVEN BY EITHER VACUUM BINS OR PINCH ROLLERS

James M. Tagawa, and Hui-li Tiao, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed April 23, 1971, Ser. No. 136,674

Int. Cl. B65h *17/0*; G11b *15/26*

U.S. Cl. 340—174.1 C **9 Claims**



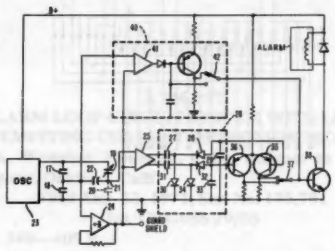
A data processing system uses a tape-containing cassette for interchange between low-speed recording systems and high-

speed or high-performance recording systems. In a low-performance system, the tape is transported wholly within the cassette. The cassette may be removed from a low-performance player and placed in a high-performance player. Then, the tape is partially removed from the cassette for higher speed transport. Modifying the front end of the cassette enables it to be placed either in the low-performance or high-performance unit enabling upward and downward compatibility. Modifications of the front end may be either manual or aoutomatic.

3,706,980
RF SYSTEM FOR MEASURING THE LEVEL OF MATERIALS

Frederick L. Maltby, Montgomery County, Pa., assignor to Drexelbrook Controls, Inc.

Filed April 27, 1970, Ser. No. 32,002
Int. Cl. G01f *23/26*; G08b *21/00*
U.S. Cl. 340—244 C **9 Claims**



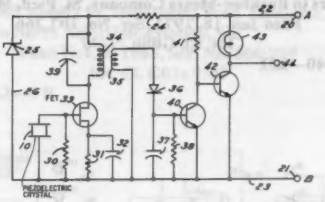
In an RF system which measures the level of materials, the probe includes a measuring electrode and a guard shield. The guard shield is interposed between the electrode and a conductive member, commonly the container for the material, throughout the body of the probe. The variable capacitance between the measuring electrode and the conductive member is a measurement of the level of the material. This variable capacitance is connected in a capacitance bridge. An operational amplifier has its input connected to the junction of two fixed adjacent arms of the bridge and has its output connected to the guard shield to maintain the guard shield at the same potential as the measuring electrode. This prevents deposits of foreign material on the probe from affecting the measurement. An output amplifier is connected between the output of the first amplifier and a junction of two opposite adjacent arms of the bridge. Connection of the output amplifier in this manner prevents changes in the input impedance of the output amplifier from changing the zero point of the bridge.

3,706,981
INDICATING SYSTEM FOR DETECTING GASEOUS AND NON-GASEOUS STATES

Atlee S. Hart, 27530 Abington Road, Southfield, Mich.

Filed Feb. 8, 1971, Ser. No. 113,202
Int. Cl. G08b *21/00*
U.S. Cl. 340—244 R **4 Claims**

A detection system capable of distinguishing between a gaseous state and a non-gaseous state such as a liquid state and/or an ice state including a piezoelectric crystal, an exciter circuit connected to the crystal for producing an alternating current output at the mechanical frequency of the crystal, a measuring circuit connected to the output of the exciter circuit for determining increases and decreases in the amplitude of the output signal, and a signal device connected to the measuring circuit and responsive to increase and/or decrease in measurement of the signal output to produce a signal advisory of the change in the ambient physical conditions to which the crystal is subject in the selected location to advise the

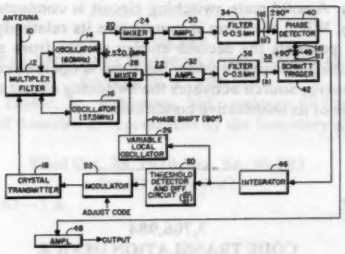


presence and/or absence of ice or liquid states relative to a gaseous state or to operate another system in response to the change.

3,706,982
INTRUSION DETECTION SYSTEM

John B. Gehman, San Diego County, Calif., assignor to General Dynamics Corporation

Filed July 1, 1968, Ser. No. 742,970
Int. Cl. G08b *13/26*
U.S. Cl. 340—258 C **11 Claims**

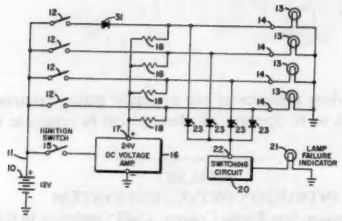


An electromagnetic intrusion system is disclosed wherein a sensor having single antenna radiates a sensing field when driven by two independent oscillators having frequencies offset from each other. The oscillators are closely coupled to the antenna and are effected by changes in antenna impedance as results when an object enters the sensing field so that their frequencies deviate. The response of the driving signals from each oscillator and the frequencies thereof are adjusted so that the frequency deviation or pulling of each of the oscillators is out of phase with respect to the other at the selected maximum range, whereas the frequency deviation and therefore sensitivity is dimished in the immediate vicinity of the antenna. The difference frequency is applied to a detection circuit which produces an output in the event of a shift in the differential frequency. The latter circuitry may include a local oscillator, the output of which is mixed with the frequency difference output in two channels. The output of the mixer in one channel is shifted in phase with respect to the output of the mixer in the other channel by 90° at the mixed frequency. A sampling phase detector compares the two channel frequencies and produces an error voltage which varies in polarity depending upon whether the differential frequency is lower or higher than the local oscillator frequency. This error voltage may be used to vary the local oscillator so that no error voltage is produced in the event that an object does not enter the sensing field. Upon entry of an object the error, voltage may be utilized to modulate a transmitter in accordance with a predetermined code representing the sensor. This transmitter may utilize the same antenna, as does the sensor, to transmit a coded signal to a receiving station at which it is demodulated to indicate the particular sensor, out of many, which has detected an object. Inasmuch as each sensor has a separate code, a single receiving channel at a station remote from the sensors may be used to monitor several sensors.

3,706,983
LAMP CIRCUIT

Roger A. Olson, and Norman M. Osero, both of Amery, Wis., assignors to Buckbee-Mears Company, St. Paul, Minn.

Filed Jan. 18, 1971, Ser. No. 107,266
Int. Cl. G08b *21/00*
U.S. Cl. 340—251 13 Claims

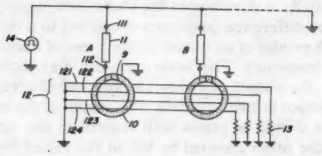


A lamp is connected to a first energy source which normally energizes the lamp and is connected to a second energy source through a relatively high impedance which does not energize the lamp. A solid state switching circuit is connected across the lamp. When the lamp is conductive its relatively low impedance prevents the second energy source from activating the switching circuit but when the lamp is open-circuited, the second energy source activates the switching circuit to give an indication of its inoperative condition.

3,706,984
CODE TRANSLATION DEVICE

Masaaki Naganuma, and Kazuyoshi Saito, Minato-ku, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Sept. 16, 1970, Ser. No. 72,611
Claims priority, application Japan, Sept. 20, 1969, 44/74999
Int. Cl. G06f *3/02*
U.S. Cl. 340—347 DD 9 Claims

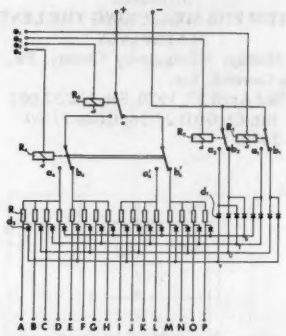


A code translation device for translating an information character into a binary signal, comprising a drive circuit for supplying current to an exciting coil wound on a magnetic core, and variable impedance means varying the amount of drive current supplied to the exciting coil and including a control coil wound on a second magnetic core to constitute high impedance to limit the amount of drive current supplied to the exciting coil to a small amount to provide four parallel O output signals to indicate an idle state at one time and thereafter to constitute a low impedance to increase the amount of drive current supplied to the exciting current to provide four parallel 1 and 0 output signals to represent a preselected information character at another time.

3,706,985
BINARY TO ONE OUT OF N CONVERTER

Jacques Darmon, 92-Sceaux, and Philippe Coffre, 92-Boulogne, both of France, assignors to Jeumont-Schneider, Paris, France

Filed May 27, 1971, Ser. No. 147,591
Claims priority, application France, May 28, 1970, 7019501
Int. Cl. H03k *13/252*
U.S. Cl. 340—347 DD 2 Claims



A data transmission selector having n inputs and 2^n outputs, n being greater than or equal to 2. The data transmission selector comprises: a first selector having p inputs and 2^p outputs (p denoting an integer which is at least 1 and less than n), the selector comprising p two-way contacts each operated by a relay winding whose input is one of the selector inputs, each contact point of the moving element of such contacts being connected to the negative side of a d.c. supply while each of the other two contact points a or b is connected to the cathode of 2^{p-1} diodes, each anode of the diodes being so connected to one of the selector outputs that any of the contact points a or b of a two-way contact is connected via one of the diodes only once to one of the outputs and the contact points a and b of any single two-way contact are not connected to the same output; a second selector having m inputs and 2^m outputs comprising 2^m-1 two-way contacts operated by m relay windings (whose inputs are the inputs of the second selector) and arranged in a pyramid of m stages (m being equal to $n-p$), the pyramid apex being connected to the positive side of the d.c. supply, the pyramid base comprising 2^m outputs; and connecting circuits between the outputs of the first and second selectors.

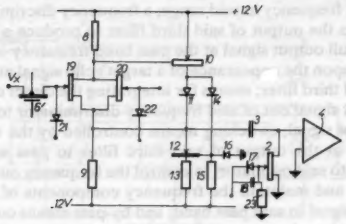
3,706,986
SAMPLING METHODS AND DEVICES, MORE PARTICULARLY FOR ANALOG-DIGITAL CONVERSIONS

Gerard Petit, Balma Lasbordes, and Pierre Bricard, Saint Michel-sur-Orge, both of France, assignors to Centre National D'Etudes Spaliales, Paris, France

Filed Jan. 13, 1971, Ser. No. 106,204
Claims priority, application France, Jan. 14, 1970, 7001281
Int. Cl. H03r *13/20*
U.S. Cl. 340—347 AD 8 Claims

A device for sampling an input analog voltage and comparing it to a reference voltage, wherein, in the course of a sampling period, an amplifier applies the input analog voltage to a

memory wherein it is stored, and thereafter during a comparison period the reference voltage is applied alone to the



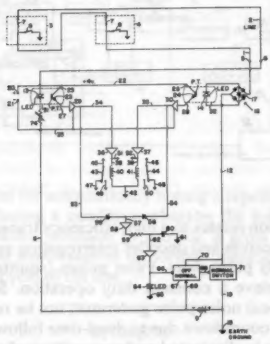
same amplifier and the difference between it and the previously stored voltage is applied to a comparator.

3,706,987

ALARM LOOP CIRCUIT SYSTEM WITH LIGHT-EMITTING CURRENT-DETECTION MEANS

Bruce A. Westphal, Piedmont, Calif., assignor to Bay Alarm Company, Oakland, Calif.

Filed Aug. 23, 1971, Ser. No. 173,791
Int. Cl. G08b 29/00
U.S. Cl. 340—409 R **10 Claims**



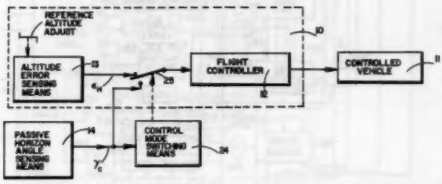
An alarm system comprising a loop circuit having several remote, code-generating switches connected in series, and a receiving station connected to the loop ends which applies an electrical potential to the loop. Wherein the receiving station provides, in series with the loop ends, light-emitting diodes which emit light when current flows through the loop onto corresponding photo-sensitive circuit elements, such as photo transistors, which are connected, through amplifiers, to a controlled device, such as printing relays and/or further transmission means which indicate which diode emits more or less light than the other. Preferably, the amplifier outputs are connected through a time-delay circuit which produces an "off normal" signal if either of the diodes has a reduced light output for longer than a predetermined time, such as one to several seconds; this signal may energize another light-emitting diode or switch the power supply to apply a different voltage to a loop end.

3,706,988

VEHICLE CONTROLLER EMPLOYING PASSIVE HORIZON SENSOR

Guy P. Bayle, Orange; Richard K. Smyth, Fullerton, both of Calif., and Robert D. Gustafson, West Lafayette, Ind., assignors to North American Aviation, Inc.

Filed Nov. 4, 1965, Ser. No. 506,295
Int. Cl. G01s 9/02
U.S. Cl. 343—6 R **9 Claims**



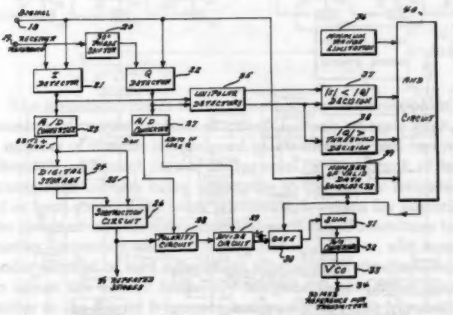
A terrain avoidance system for airborne use and employing a forward-looking, nodding, non-radiating sensor (or radiometer) for sensing the direction of the horizon, in cooperation with a downward-looking radar altimeter, whereby the probability of over-the-horizon detection of a utilizing aircraft is minimized.

3,706,989

DIGITAL MOTION COMPENSATION SYSTEM FOR RADAR PLATFORMS

John W. Taylor, Jr., Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Oct. 28, 1970, Ser. No. 90,203
Int. Cl. G01s 9/42
U.S. Cl. 343—7 A **3 Claims**



A digital motion compensation system for radar platforms wherein motion of the radar platform is detected by a digital process using data which has already been digitized and stored for MTI (moving target indication) purposes.

3,706,990

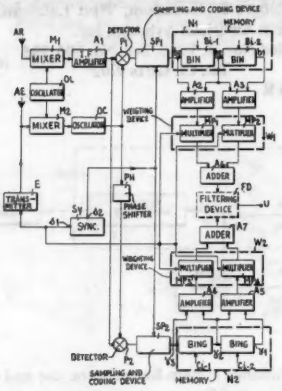
DEVICES FOR ELIMINATING FIXED-ECHOES

Roland Carre, Paris, France, assignor to Thomson-CSF, Paris, France

Filed June 10, 1970, Ser. No. 45,128
Claims priority, application France, June 19, 1969, 692058
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **6 Claims**

A wobbulated pulse repetition frequency M.T.I. radar system comprising means carrying out coherent detection of

the echo signals, means supplying the differences between successive coherent echo signals of a target and means supplying a weighted sum of two successively supplied differences;

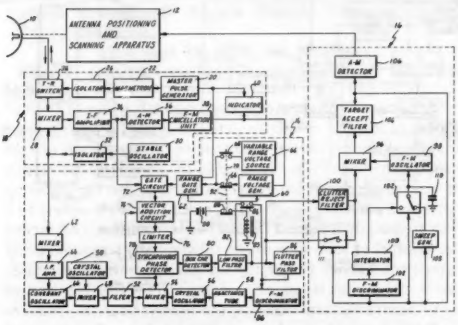


the weighting coefficients are so selected that in the resulting sum the spreading of the spectrum of the echoes of the stationary targets, due to the wobbulation, is compensated.

3,706,991
COHERENT-ANGLE TRACKING SYSTEM INCORPORATING TARGET-VELOCITY TRACKING APPARATUS

Arnold H. Gillmer, and Harold V. Hance, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed April 5, 1956, Ser. No. 576,471
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **5 Claims**

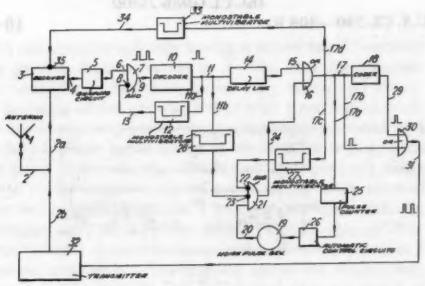


4. In a moving target indicating system wherein a composite signal containing both target echo and clutter return signals is received in response to exploratory pulses radiated at a predetermined pulse repetition frequency and in which signal components are formed with the spectral distribution of the clutter and target echo signals maintained in spectral half intervals of the pulse repetition frequency comprising: means for maintaining said clutter signals at desired frequency in said half intervals; a first filter having pass band for passing one spectral half interval of the pulse repetition frequency; a second filter coupled to the output of said first filter for rejecting said spectral distribution of frequency components of said clutter return signal; an oscillator; means to frequency modulate said oscillator through a range as wide as said spectral half interval passed through said first filter; a mixer coupled to the output of said second filter and said oscillator, to shift the frequency components of said target echo signal through a range of frequencies as wide as said spectral half interval passed through said first filter; a third filter coupled to the output of said mixer having a pass band located at a predetermined frequency in said range; a frequency discriminator coupled to the output of said third filter to produce a direct current null output signal at the pass band frequency of said third filter upon the appearance of a target echo signal at the output of said third filter; means for integrating the direct current null output signal out of said frequency discriminator to produce a control signal; switching means controlled by the target echo signal at the output of said third filter to pass said control signal to said oscillator, to control the frequency output of said mixer and maintain the frequency components of said target echo signal in said pass band; and by-pass means connected to respond to the target echo signal at the output of said third filter to by-pass said second filter.

3,706,992
CONSTANT-DUTY TRANSPONDER

Jacques Daniel Philippe Brisse, 92-Saint-Cloud, and Jean-Claude Joguet, 92-Boulogne-Billancourt, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed July 23, 1970, Ser. No. 57,668
Int. Cl. G01s 9/56
U.S. Cl. 343—6.8 LC **8 Claims**



This invention relates to a high efficiency transponder of the type which receives and decodes interrogation pulse pairs and transmits reply pulse pairs. Filler pulses (squitter) are transmitted to achieve a constant duty operation. Squitter is initiated by a local noise pulse generator, not be receiver noise. Therefor, the countdown due to dead-time following decoding of the squitter is eliminated and recognition of genuine interrogations is not inhibited.

3,706,993
SEARCH SYSTEM

John H. Kuck, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed March 9, 1964, Ser. No. 350,951
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **5 Claims**

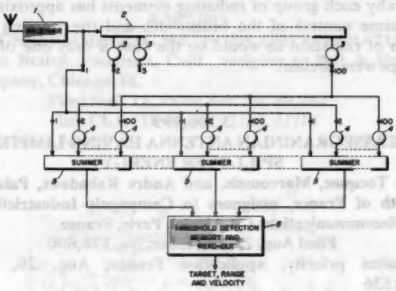
2. A search system for detecting moving targets, in chaff, and including a transmitter for reflecting bursts of randomly phase coded, electromagnetic energy from a target, and a receiver, said receiver comprising

a delay line having a plurality of output taps thereon,

means for applying said reflected bursts to said delay line,

a plurality of phase shifters which are preset in accordance with the phase coding of said transmitter,

each phase shifting means being connected to a different output tap of said delay line, said plurality of phase shifters removing said phase coding from said bursts and providing a pure Doppler signal output, and



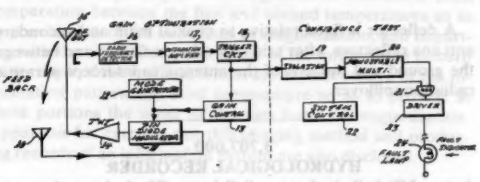
display means operably connected to receive the output from each of said phase shifting means for indicating the Doppler shift introduced by the target to each pulse of said burst.

3,706,994

AUTOMATIC CONFIDENCE TEST FOR ECM REPEATER

Edward O. Uhrig, Ellicott City, Md., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Oct. 1, 1970, Ser. No. 77,161
Int. Cl. G01s *7/40*
U.S. Cl. 343—17.7 **3 Claims**



An apparatus for automatically testing a repeater type ECM system by inducing a condition whereby the system gain exceeds the antenna isolation to provide a gross level system confidence test simultaneous to normal operation due to the very low duty cycle of the test.

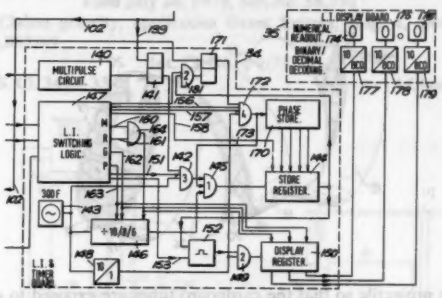
3,706,995

RECEIVERS FOR PHASE COMPARISON RADIO NAVIGATION SYSTEMS

David Geoffrey Hughes, London, England, assignor to Decca Limited, London, England

Filed Nov. 10, 1970, Ser. No. 88,398
Claims priority, application Great Britain, Nov. 10, 1969, 54,971/69
Int. Cl. G01s *1/30*
U.S. Cl. 343—105 R **9 Claims**

In a receiver for a phase comparison radio navigation system in which fixed stations normally radiate signals, one from each station on different harmonics of a common fundamental frequency and in which, for lane identification, each station periodically radiates simultaneously signals of a number of frequencies, known as a multipulse, from which a signal of the fundamental frequency may be derived at the receiver, the receiver has an oscillator locked in phase to signals of the one frequency normally radiated from the master station. The output of this oscillator is divided down to the fundamental frequency but the divider is not notched. Instead the phase relationship between the fundamental frequency signal from the master multipulse transmissions and the divider output signal are compared digitally in phase and the phase difference is stored as a digital number and applied



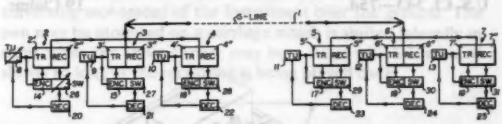
as a correction to all the phase determinations between the divider output and the fundamental frequency signals derived from the slave stations. This corrects not only for the absence of notching in the divider but also for certain other minor phase errors in the system.

3,706,996

FREQUENCY ADJUSTMENT FOR TWO-WAY VIDEO TRANSMISSION

Theodore Hafner, 1501 Broadway, New York, N.Y.

Filed April 14, 1970, Ser. No. 28,302
Int. Cl. H04b *1/50*
U.S. Cl. 343—176 **21 Claims**



The invention relates to the simultaneous transmission of of number of carrier modulated video channels wherein each of a number of stations has assigned to it transmitter and receiver channels,, different carrier frequencies, at least each of said transmitter carriers being adjustable to the carrier frequency of at least some of the other transmitters; means for adjusting the assigned carrier frequency of one of said transmitters to a carrier frequency assigned to another transmitter, and means under control of said adjustment substantially simultaneously to adjust the carrier frequency assigned to said other transmitter to the carrier frequency assigned to the first transmitter so as to permit the two stations, the receiver carrier frequencies of which remain unchanged, upon being called upon by one of said stations to exchange video information substantially simultaneously.

3,706,997

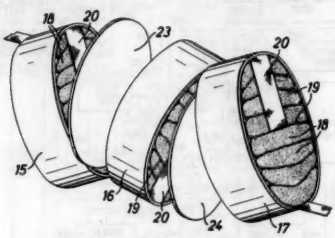
DISPENSING APPARATUS

Robert Whatmore, London, England, assignor to F. Bender Limited, London, England

Filed March 4, 1970, Ser. No. 16,454
Claims priority, application Germany, March 7, 1969, 12193/69
Int. Cl. H01q *17/00*
U.S. Cl. 343—18 B **11 Claims**

Dispensing apparatus comprising several cardboard tubes packed with needles to be dispensed, and a fabric tape threaded axially through all the tubes and wrapped around bunches of the needles in each tube. The dispensing apparatus

is housed within a load carrying compartment of a projectile from which the needles are to be dispensed and the ends of the fabric tape are secured to a forward and aft part of the projectile. The forward and aft parts are separable during flight of



the projectile so that the cardboard tubes are exposed to atmosphere and the fabric tape is straightened out. The straightening out action of the fabric tape ejects the needles from the cardboard tubes and dispenses them from the projectile into the atmosphere within which they scatter.

3,706,998

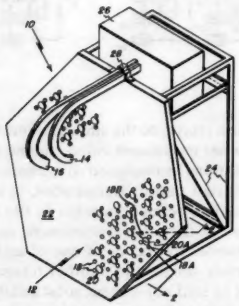
MULTIPLE INTERLEAVED PHASED ANTENNA ARRAY PROVIDING SIMULTANEOUS OPERATION AT TWO FREQUENCIES AND TWO POLARIZATIONS

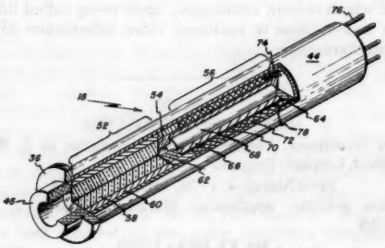
Burrell R. Hatcher, Bedford; Aldo R. Miccioli, Acton; Max C. Mohr, Chelmsford, and Edward J. Sheldon, Lexington, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 779,767, Nov. 29, 1968, abandoned. This application Feb. 3, 1971, Ser. No. 112,395

Int. Cl. H01q *19/08*

U.S. Cl. 343—754 **19 Claims**





A phased array antenna including within its single electromagnetic radiating aperture two or more groups of radiating elements, each group of radiating elements being distinguished by the polarization and frequency spectrum of its radiation. The radiating elements of each group are of sufficiently small physical size compared to their free space wavelength to permit their being interleaved among the radiating elements of the other groups in a configuration whereby each group of radiating elements has approximately the same control of the beamwidth and the steering of its beam of radiation as would be the case if only one of these groups were present.

3,706,999

CASSEGRANINIAN ANTENNA HAVING LIMITED SPILLOVER ENERGY

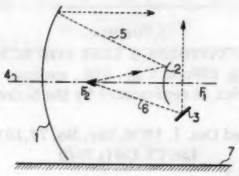
Yves Tocquec, Marcoussis, and Andre Rabadeux, Palaiseau, both of France, assignors to Campagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed Aug. 25, 1971, Ser. No. 174,600

Claims priority, application France, Aug. 28, 1970, 7031536

Int. Cl. H01q *19/14*

U.S. Cl. 343—782 **4 Claims**



A deflector is fixed relative to coaxial main and secondary antenna reflectors, after said secondary reflector and between the ground and the axis of the antenna to intercept parasitic radiation spillover.

3,707,000

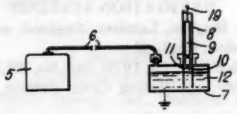
HYDROLOGICAL RECORDER

James Mitchell Anderson, Salisbury, Rhodesia, assignor to Philip Van Heerden, in his capacity of Minister of Water Development for the Government of Rhodesia, 'Peridot', Rusake, Rhodesia

Filed June 5, 1970, Ser. No. 43,714

Int. Cl. G01l *19/08*

U.S. Cl. 346—33 TP **1 Claim**



Data processing and recording apparatus for use in receiving and recording hydrological information. There is provided a sensor means and a punching system to perforate paper tape at predeterminable time intervals in accordance with stimuli received from the sensor means. The sensor means has a pressure sensitive device located where hydrological information is sought. A detector translates pressure changes in the pressure sensitive device into electrical impulses to operate the punching system. The pressure sensitive device has an open ended tube through which a gas is forced from a supply vessel.

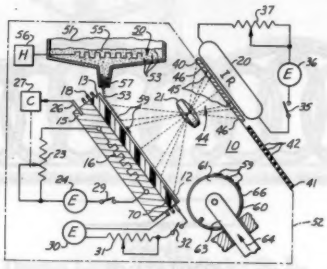
The gas pressure is increased until gas bubbles pass from the open end of the tube at a predeterminable rate and a well-type mercury manometer is connected to the pressure sensitive device in an air-tight manner.

3,707,001

MAGNETIC IMAGING METHODS AND APPARATUS

Norman Notley, Pasadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 12, 1970, Ser. No. 88,782
Int. Cl. G11b 11/04, 11/10, 11/14
U.S. Cl. 346—74 MT 9 Claims



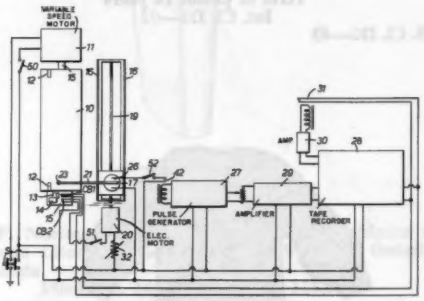
A method of producing a magnetic image of an information pattern provides a magnetizable medium having a transition between a first state of magnetization and a second state of magnetization at a first temperature and a transition between the second state of magnetization and the first state of magnetization at a second temperature. This method also includes the steps of imparting to the magnetizable medium a third temperature between the first and second temperatures so as to provide one of the two states of magnetization, and imparting with the aid of a thermal image of the information pattern to portions of the medium which are representative of the information pattern the third temperature so as to provide at these portions the other of the two states of magnetization. Apparatus for carrying out this imaging method and producing records of an information pattern are also disclosed.

3,707,002

PLOTTING APPARATUS FOR USE IN CONJUNCTION WITH SURVEYING INSTRUMENTS

Mark I. Howell, Bristol, England, assignor to Electrolocation Limited, Bristol, England

Filed July 28, 1970, Ser. No. 58,791
Claims priority, application Great Britain, Aug. 4, 1969, 38,867/69
Int. Cl. G01d 9/38
U.S. Cl. 346—33 M 4 Claims



Plotting apparatus for producing a plot or chart of the signals recorded by a surveying instrument which is traversed over the ground and produces electrical signals which vary in accordance with the electromagnetic reflection coefficient of the ground, comprising means for playing back a recording of the signal, a solenoid-operated pen arranged to mark dots on a sheet secured on a carrier with a frequency dependent on the magnitude of the signal, and means for moving the pen and the sheet carrier relative to one another correspondingly to the traversing movement of the instrument over the ground. The pen may be mounted on a carriage which is shifted laterally in steps while the sheet carrier may be a drum which is rotated slowly so long as the recording is being played back.

3,707,003

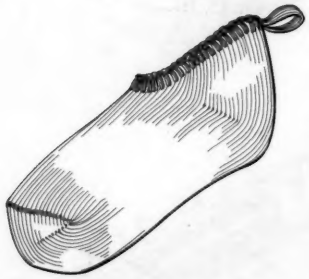
Patent Not Issued For This Number

DESIGNS

DECEMBER 19, 1972

225,489
KNIT DRESS OR THE LIKE
Margaret A. Graham, Rte. 2, P.O. Box 111, Cary, N.C. 27511
Filed Apr. 27, 1970, Ser. No. 22,660
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—43

225,490
CUFFLESS SOCK
Raymond R. Sindelar and Robert E. Chesebro, Sheboygan, Wis., assignors to Wigwam Mills, Inc., Sheboygan, Wis.
Filed Sept. 29, 1969, Ser. No. 19,326
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D2—320

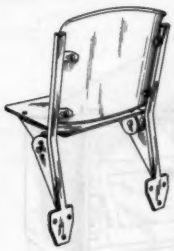


225,491
HEADBOARD FOR A BEDSTEAD OR SIMILAR ARTICLE
Huey T. Keller, 1710 Bristol Place, High Point, N.C. 27262
Filed Aug. 10, 1970, Ser. No. 24,383
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D5—4

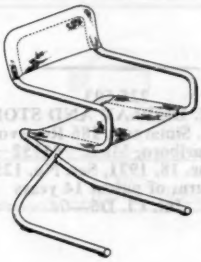
225,492
FOOTSTOOL
Percy A. Swank, 5708 Lewisburg-Ozias Road, Lewisburg, Ohio 45338
Filed Mar. 8, 1971, Ser. No. 122,261
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—32

225,493
FOLDING STEP LADDER
Joseph V. Rossi, Chicago, Ill., assignor to Comfort Lines, Inc., Chicago, Ill.
Filed May 6, 1971, Ser. No. 141,092
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—35

225,494
FOLDABLE STADIUM SEAT
Claude W. Ahrens, W. Highway 6, Grinnell, Iowa 50112
Filed Apr. 16, 1971, Ser. No. 134,914
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—41



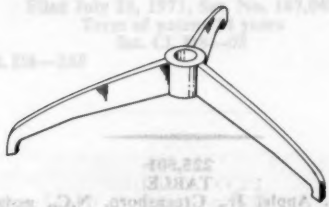
225,495
CHAIR
Thomas Lamb, 349 Wellseley St. E., Toronto 5, Ontario, Canada
Filed Apr. 8, 1971, Ser. No. 132,625
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—67



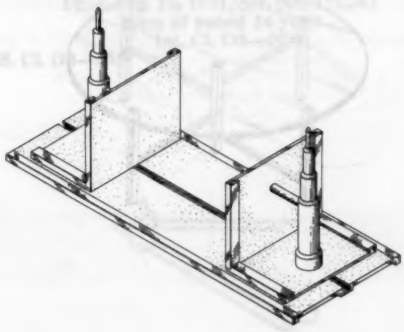
225,496
CHAIR
John D. Rice, 3226 Lawndale Drive, Greensboro, N.C. 27408
Filed Apr. 7, 1971, Ser. No. 132,259
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—71

225,497
TOOTHPASTE HOLDER
Rachelle R. Smith, R.D. 2, Mars, Pa. 16046
Filed Apr. 9, 1971, Ser. No. 132,937
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—95

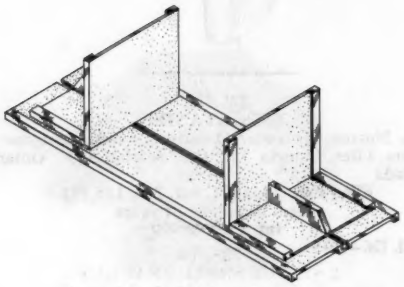
225,498
TREE STANDS
Ian F. Norton, Toronto, Ontario, Canada, assignor to Noma Lites Canada Limited, Scarborough, Ontario, Canada
Filed Feb. 24, 1971, Ser. No. 118,591
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—105



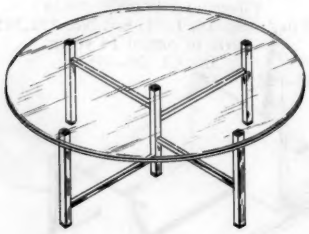
225,499
BOOKHOLDER OR SIMILAR ARTICLE
Gerald F. Lewis, 1850 Columbia, Berkley, Mich. 48072
Filed Mar. 4, 1971, Ser. No. 121,233
Term of patent 3½ years
Int. Cl. D6—*99*
U.S. Cl. D6—106



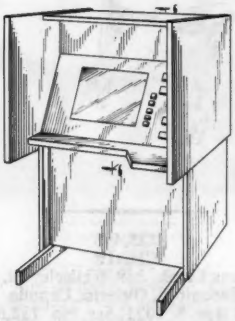
225,500
BOOKHOLDER OR SIMILAR ARTICLE
Gerald F. Lewis, 1850 Columbia, Berkley, Mich. 48072
Filed Mar. 4, 1971, Ser. No. 121,235
Term of patent 3½ years
Int. Cl. D6—*99*
U.S. Cl. D6—106



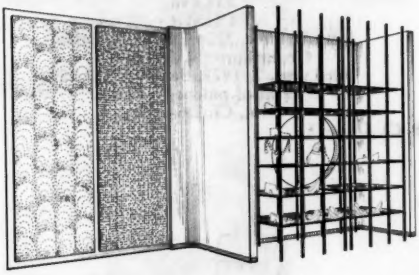
225,501
TABLE
Charles N. Apple, Jr., Greensboro, N.C., assignor to Metafab Industries, Incorporated, Greensboro, N.C.
Filed Mar. 4, 1971, Ser. No. 120,910
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



225,502
INTERROGATION APPARATUS CARREL
Walter M. Miller, Arlington Heights, Ill., assignor to Medequip Corporation
Filed Nov. 18, 1970, Ser. No. 26,060
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—181

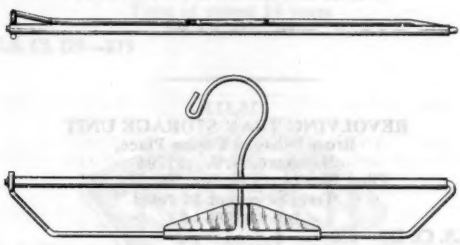


225,503
MERCHANDISE DISPLAY AND STORAGE UNIT
Vincent J. Simarano, 186 Reservoir St., Marlboro, Mass. 01752
Filed Mar. 18, 1971, Ser. No. 125,926
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—190

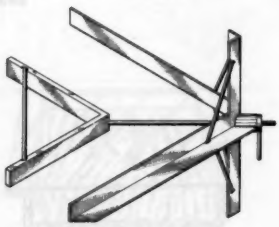


225,504
DECORATIVE CAP FOR USE ON A CHAIR BACK SUPPORT UPRIGHT OR THE LIKE
Wayne W. Good, Sturgis, Mich., assignor to Harter Corporation, Sturgis, Mich.
Filed Aug. 26, 1970, Ser. No. 24,701
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—192

225,505
TROUSER HANGER
John J. Sullivan, 3920 Granby St., Norfolk, Va. 23504
Filed Nov. 9, 1971, Ser. No. 197,197
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—252

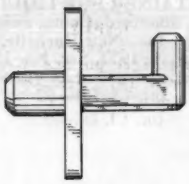


225,506
CLAMP FOR CORNER CONCRETE FORMS
Daniel Priore, 2265 SW. 15th St., Miami, Fla. 33145
Filed May 7, 1971, Ser. No. 141,462
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—72



225,507
SUSPENSION HOOK FOR A CURTAIN, OR THE LIKE
Paul Hirschl, 177 Madison Ave., New York, N.Y. 10016
Filed Jan. 10, 1972, Ser. No. 216,904
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—248

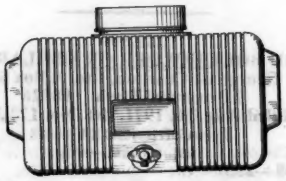
225,508
CABINET SHELF BRACKET
Dixon L. Freeman, 6806 Opal Lane SW., Tacoma, Wash. 98498
Filed July 28, 1971, Ser. No. 167,068
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—255



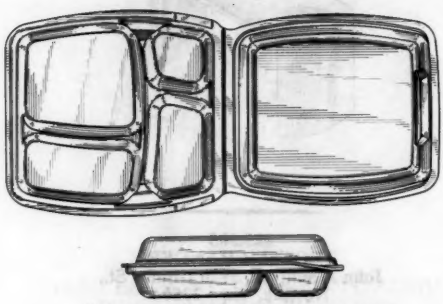
225,509
NUT AND BOLT HOLDER OR SIMILAR ARTICLE
George G. Charlton, Rte. 3, Box 67, Ellensburg, Wash. 98926
Filed Aug. 16, 1971, Ser. No. 172,361
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—255

225,510
BOTTLE
Gordon A. Strand, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Oct. 1, 1971, Ser. No. 185,927
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—92

225,511
CONTAINER FOR LIQUIDS
Joseph D. Brown, Stamford, Conn., assignor to Poloron Products, Inc., New Rochelle, N.Y.
Filed Sept. 9, 1971, Ser. No. 179,260
Term of patent 14 years
Int. Cl. D9—*02*
U.S. Cl. D9—175

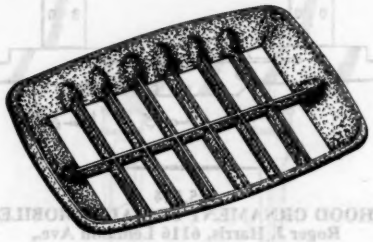


225,512
COVERED HOT FOOD TRAY
Steven J. Cyr and Mark W. Whelan, Chippewa Falls, Wis., and John A. Krause, Tucker, Ga., assignors to Standard Oil Company, Chicago, Ill.
Filed Dec. 16, 1970, Ser. No. 26,537
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185

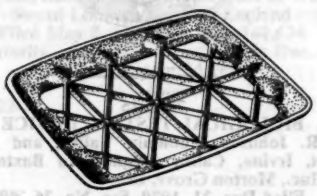


225,513
REVOLVING TRAY STORAGE UNIT
Bruce Waag, 4 Poplar Place, Bayshore, N.Y. 11706
Filed Jan. 14, 1971, Ser. No. 106,627
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—232

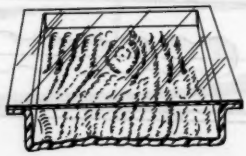
225,514
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,369
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



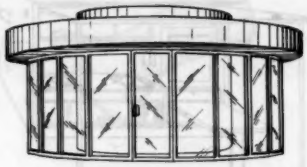
225,515
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,370
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



225,516
COMBINED MOLD AND PACKING TRAY FOR A CONFECTION
Robert W. Schumann, Brookfield, Wis., assignor to W. R. Grace & Co., New York, N.Y.
Continuation-in-part of design application Ser. No. 20,534, Dec. 17, 1969. This application Feb. 25, 1971, Ser. No. 119,080
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—240



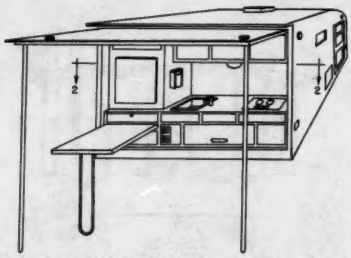
225,517
PETROLEUM PRODUCTS SERVICE STATION
Robert Coplon, Verona, N.J., assignor to Supermarkets General Corporation, Woodbridge, N.J.
Filed July 7, 1970, Ser. No. 23,850
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



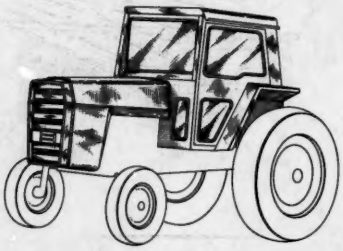
225,518
RESIDENTIAL BUILDING
Willilam J. McNeil, 504 11th Ave., Rock Island, Ill. 61201
Filed Mar. 23, 1971, Ser. No. 127,425
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

225,519
PROGRAMMED PSYCHOMOTOR LEARNING LABORATORY
James T. Glisson, Evinston, Fla., assignor to Motivation Systems, Inc., Gainesville, Fla.
Filed Aug. 18, 1970, Ser. No. 24,563
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

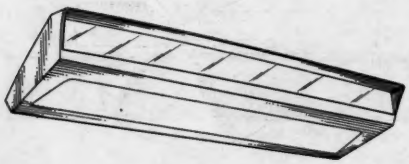
225,520
COMBINED TRAILER AND KITCHEN UNIT
Wayne F. Kathmann, R.F.D. 1,
Templeton, Iowa 51463
Filed Mar. 25, 1971, Ser. No. 128,227
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3



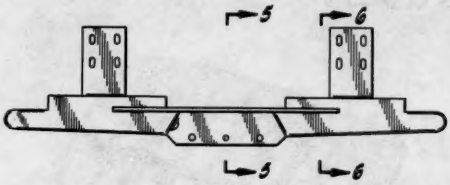
225,521
TRACTOR
Leo J. Lorenz, Farmington, and Wilford E. Bean, Southfield, Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.
Filed May 6, 1971, Ser. No. 141,086
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3



225,522
PERISCOPE-TYPE REAR VIEW MIRROR
Lynn Harold Hodge, 841 McNichols W.,
Highland Park, Mich. 48203
Filed Apr. 6, 1970, Ser. No. 22,268
Term of patent 3½ years
Int. Cl. D12—*14*
U.S. Cl. D14—6

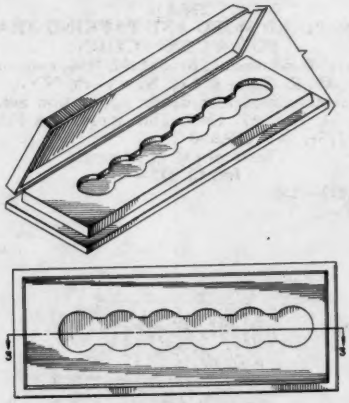


225,523
BUMPER
Paul B. Nunn, P.O. Box 19043,
Oklahoma City, Okla. 73119
Filed June 26, 1970, Ser. No. 23,693
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6

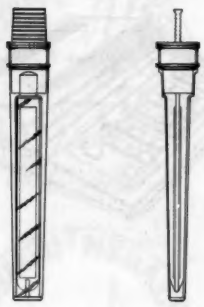


225,524
HOOD ORNAMENT FOR AUTOMOBILE
Roger J. Harris, 6116 Lemmon Ave.,
Dallas, Tex. 75209
Filed Jan. 27, 1971, Ser. No. 110,380
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—18

225,525
BIOLOGICAL TESTING DEVICE
Stanley R. Johnson, Fountain Valley, and Arthur P. Stewart, Irvine, Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed Dec. 21, 1970, Ser. No. 26,609
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—1

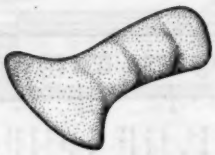


225,526
CULTURE DEVICE
Ronald Baum, Merion Station, and Anthony J. Calabrese, Malvern, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.
Filed July 8, 1971, Ser. No. 160,994
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—1

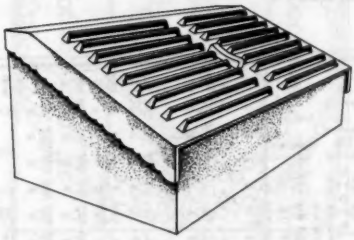


225,527
SWORD
Eric L. Cole, London, England, assignor to Wilkinson Sword Limited, London, England
Filed May 5, 1971, Ser. No. 140,634
Claims priority, application Great Britain Dec. 4, 1970
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—1

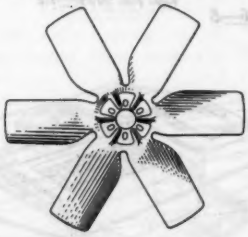
225,528
PISTOL GRIP FOR FISHING ROD
John R. Tate, 5351 Santa Monica Cove, and Jimmy C. Pigg, 1312 Marlin Road, both of Memphis, Tenn. 38116
Filed May 3, 1971, Ser. No. 139,993
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23



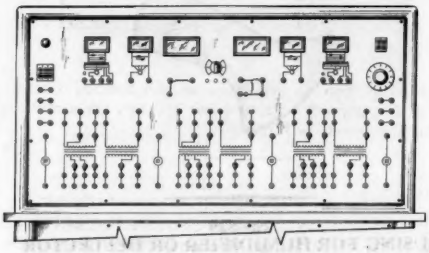
225,529
HOUSING FOR HUMIDIFIER OR DEFLECTOR OR THE LIKE
Salvatore R. De Marco, Cherry Hill Township, Camden, County, N.J., assignor to Moisture Vent, Inc., Woodbury, N.J.
Continuation-in-part of design application Ser. No. 24,873, Sept. 8, 1970. This application Feb. 22, 1971, Ser. No. 117,857
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—146



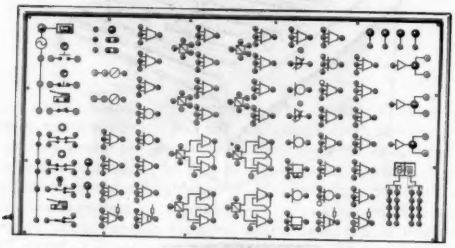
225,530
COOLING FAN
Robert C. Pommert, Pacific, Wash., assignor to Flexalite Corporation, Tacoma, Wash.
Filed May 6, 1971, Ser. No. 141,090
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—165



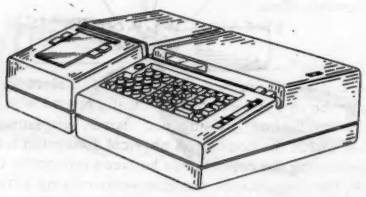
225,531
TRANSFORMER LEARNING CENTER
Daniel M. Flynn, Hampden, Stanley J. Bandoski, Jr., Springfield, and William R. Clow, Agawam, Mass., assignors to Hampden Engineering Company, East Longmeadow, Mass.
Filed July 28, 1970, Ser. No. 24,177
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1



225,532
SOLID STATE LOGIC LEARNING CENTER
Daniel M. Flynn, Hampden, Stanley J. Bandoski, Jr., Springfield, and William R. Clow, Agawam, Mass., assignors to Hampden Engineering Company, East Longmeadow, Mass.
Filed July 28, 1970, Ser. No. 24,179
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1

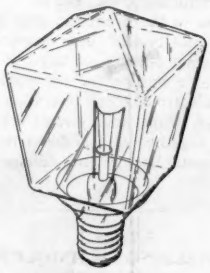


225,533
ELECTRONIC PRINTING CALCULATOR
Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Torino, Italy
Filed Oct. 13, 1970, Ser. No. 25,476
Claims priority, application Italy Apr. 27, 1970
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



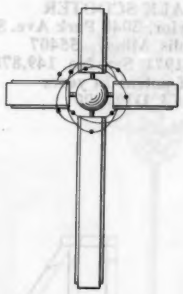
225,534
ELECTRONIC CALCULATING MACHINE
Katumi Jimbo, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Nov. 11, 1971, Ser. No. 198,074
Claims priority, application Japan May 14, 1971
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

225,535
LIGHT BULB OR THE LIKE
Yasuhiko Watanabe, 2779 Takado-cho, Kohoku-ku, Yokohama, Japan
Filed Apr. 5, 1971, Ser. No. 131,589
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—8



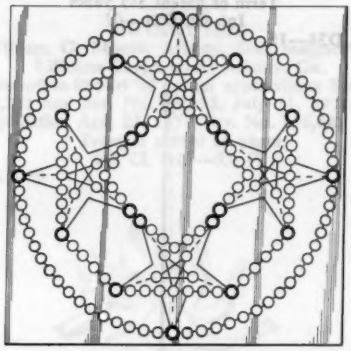
225,536
MEDAL OR SIMILAR ARTICLE
Adolph H. Humphreys, Fairfax, Va., assignor to the United States of America as represented by the Secretary of the Army
Filed Mar. 26, 1971, Ser. No. 128,656
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D29—19

225,537
ALTAR CROSS OR THE LIKE
Arthur C. Bowers, 2919 Coconut Ave., Miami, Fla. 33133
Filed Apr. 20, 1971, Ser. No. 135,818
Term of patent 3½ years
Int. Cl. D11—*02*
U.S. Cl. D29—23

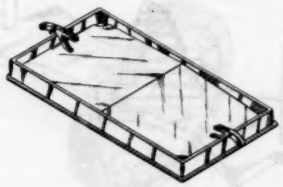


225,538
PHOTO TROPHY
Tommie J. Culley, 11127 Ebert Drive, St. Louis, Mo. 63136
Filed June 29, 1971, Ser. No. 158,143
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—28

225,539
GAME BOARD
James Hubert Guthrie, 35 Willis Lane, St. Albans, W. Va. 25177
Filed Apr. 3, 1970, Ser. No. 22,237
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



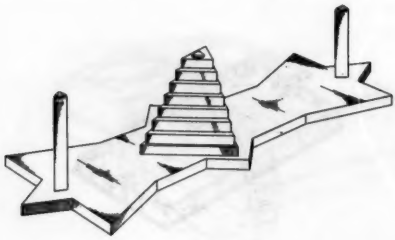
225,540
GAME BOARD
Yasuta Satoh, 758 5-chome, Matsugaoka, Chiba, Japan
Filed Feb. 12, 1971, Ser. No. 115,159
Claims priority, application Japan Aug. 27, 1970
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



225,541
TOY ROUNDABOUT
Terry J. Simpkins, Dublin, Ohio, assignor to Richardson/Smith, Incorporated, Worthington, Ohio
Filed Mar. 26, 1971, Ser. No. 128,633
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5

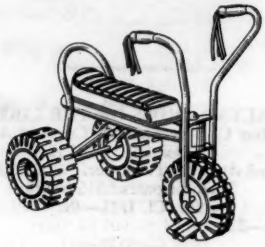
225,542
TOY FILM BURSTING CANE
Lawrence H. Strayer, Kent, Ohio, and Kenneth W. Pratt, Beltsville, Md., assignors to Funtime Products, Inc., Arlington, Va.
Filed Apr. 20, 1971, Ser. No. 135,830
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—15

225,543
TRANSFER GAME PUZZLE
Patrick T. Hardesty, 1224 N. Shaver, Springfield, Oreg. 97266
Filed Apr. 23, 1971, Ser. No. 137,116
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—15

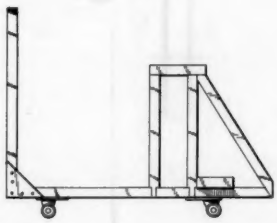


225,544
VEHICULAR TOY
Norman Spiegel, 145 E. 15th St., New York, N.Y. 10003
Filed Apr. 27, 1971, Ser. No. 138,013
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

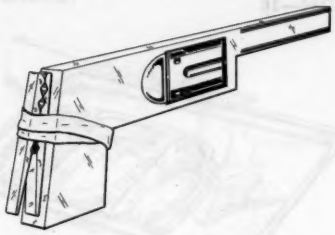
225,545
TRICYCLE
Stanley M. Novak, Jr., Olney, Ill., assignor to AMF Incorporated, White Plains, N.Y.
Filed May 5, 1971, Ser. No. 140,642
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D34—15



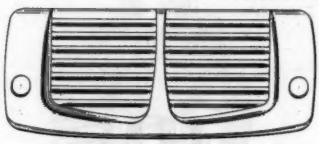
255,546
SIDEWALK SCOOTER
Johnnie D. Taylor, 3040 Park Ave. S., Minneapolis, Minn. 55407
Filed June 3, 1971, Ser. No. 149,878
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D34—15



225,547
CHILD'S TOY GUN
Roy D. Griffin, also known as Roy Dee Griffin, Sr., 4025 Terrace St. S., Amarillo, Tex. 79109
Filed June 23, 1971, Ser. No. 156,162
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

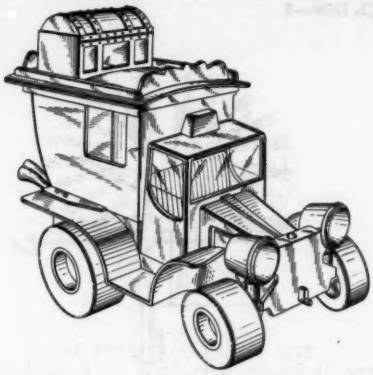


225,548
TRICYCLE REAR STEP DECK
Frederick E. Purdy, Olney, Ill., assignor to AMF Incorporated
Filed June 25, 1971, Ser. No. 157,081
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D34—15



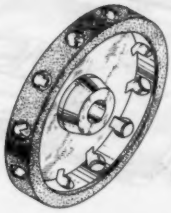
225,549
PIN WHEEL TOY OR SIMILAR ARTICLE
Arthur Halpern, 40 E. 9th St., New York, N.Y. 10003
Filed Aug. 5, 1971, Ser. No. 169,593
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

225,550
TOY VEHICLE
Sal Leone, Brentwood, N.Y., assignor to Louis Marx & Co., Inc., New York, N.Y.
Filed Aug. 18, 1971, Ser. No. 172,615
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



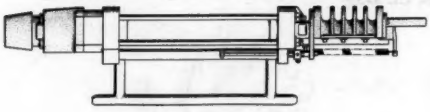
225,551
ROTARY HOE
William G. Moore, Albany, Ga., assignor to Lilliston Corporation, Albany, Ga.
Continuation-in-part of design applications Ser. No. 24,251 and Ser. No. 24,252, July 31, 1970. This application Apr. 22, 1971, Ser. No. 136,641
Term of patent 14 years
Int. Cl. D15—*03, 99*
U.S. Cl. D39

225,552
AIR COOLED TIRE RASPING WHEEL
Alton E. Tobey, 2203 Mission St., Santa Cruz, Calif. 95060
Filed Jan. 4, 1971, Ser. No. 103,946
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D37—1

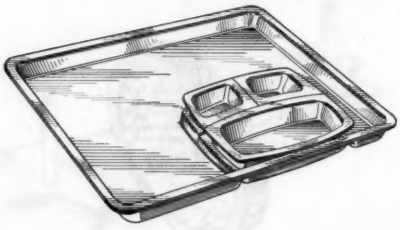


225,553
ROTARY HOE
William G. Moore, Albany, Ga., assignor to Lilliston Corporation, Albany, Ga.
Continuation-in-part of design applications Ser. No. 24,253 and Ser. No. 24,254, July 31, 1970. This application Apr. 22, 1971, Ser. No. 136,663
Term of patent 14 years
Int. Cl. D15—*03, 99*
U.S. Cl. D39—1

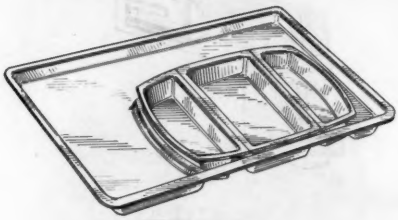
225,554
HYDRAULIC JACK FOR PRESTRESSING CONCRETE
James W. Howlett, Oakland, Calif., assignor to Howlett Machine Works
Filed July 6, 1971, Ser. No. 160,255
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D41—3



225,555
COMBINED MULTI-UNIT DISH SET AND TRAY HOLDER THEREFOR
Steven J. Cyr and Mark W. Whelan, Chippewa Falls, Wis., assignors to Standard Oil Company, Chicago, Ill.
Filed Dec. 16, 1970, Ser. No. 26,522
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—10

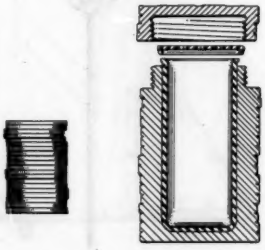


225,556
COMBINED MULTI-UNIT DISH SET AND TRAY HOLDER THEREFOR
Steven J. Cyr and Mark W. Whelan, Chippewa Falls, Wis., assignors to Standard Oil Company, Chicago, Ill.
Filed Dec. 16, 1970, Ser. No. 26,523
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—10

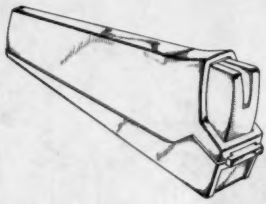


225,557
COVERED PITCHER
Jack E. Brown, 47 Larkspur Road, North Stamford, Conn.
Filed Mar. 31, 1971, Ser. No. 130,056
Term of patent 3½ years
Int. Cl. D7—*01*
U.S. Cl. D44—21

225,558
CONDIMENT DISPENSER
Robert L. Soper, P.O. Box 2004, Stockton, Calif. 95210, and Ruth Abel, 14516 12th NE., Seattle, Wash. 98115
Filed June 3, 1970, Ser. No. 23,263
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D44—22

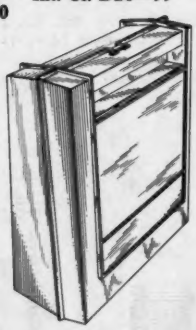


225,559
SCABBARD FOR A KNIFE
Peter K. Bayly, Melbourne, Victoria, Australia, assignor to Wiltshire Cutlery Company Proprietary Limited, Tottenham, Victoria, Australia
Filed June 22, 1971, Ser. No. 155,687
Claims priority, application Australia Dec. 24, 1970
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—29

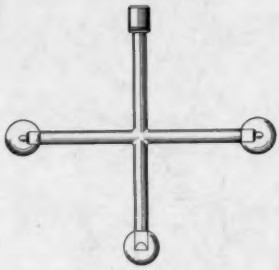


225,560
PENDANT
Ade Bethune, Newport, R.I., assignor to Terra-Sancta Creations, Inc., Philadelphia, Pa.
Filed Nov. 18, 1970, Ser. No. 26,064
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—16

225,561
CABINET FOR A SUN LAMP
Thomas Mills, Lombard, Ill., assignor to Canrad Precision Industries, Inc., Pelham, N.Y.
Filed Apr. 30, 1971, Ser. No. 139,030
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D48—20



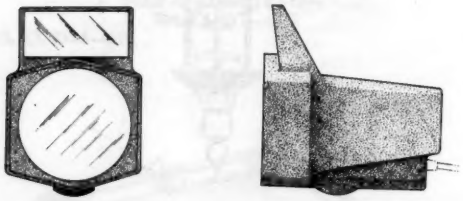
225,562
COMBINED TIRE TOOL AND DOUBLE WARNING LAMP
Willis E. Green, 7201 Main Ave., Orangevale, Calif. 95662
Filed Nov. 3, 1971, Ser. No. 195,531
Term of patent 14 years
Int. Cl. D8—*05*; D26—*99*
U.S. Cl. D48—20



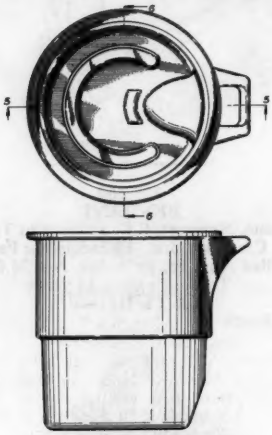
225,563
HANGING FOUNTAIN LAMP
Marvin A. Mackey, 10818 NE. 117th Ave., Vancouver, Wash. 98662
Filed Jan. 28, 1971, Ser. No. 110,790
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23

225,564
SURVIVAL LAMP OR SIMILAR ARTICLE
David T. McArthur, Santa Ana, Calif., assignor to Survival Oriented Systems Company, Corona Del Mar, Calif.
Filed June 8, 1971, Ser. No. 151,167
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24

225,565
PORTABLE LIGHT
Emery G. Audesse, Salem, John J. Vetere, Beverly, and Arnold E. Westlund, Jr., Manchester, Mass., assignors to GTE Sylvania Incorporated
Filed Aug. 23, 1971, Ser. No. 174,292
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24



225,566
REFUSE CONTAINER
Anthony J. Brescia, Winchester, Va., assignor to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Aug. 17, 1971, Ser. No. 172,612
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D49—30

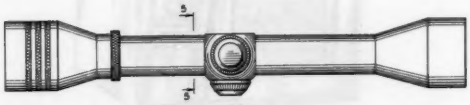


225,567
METER READOUT UNIT
Billy J. Harris, Paul L. Vergamini, and Edwin T. Yagelowich, Greensboro, N.C., assignors to Gilbert & Barker Manufacturing Company, New York, N.Y.
Filed July 9, 1970, Ser. No. 23,888
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6

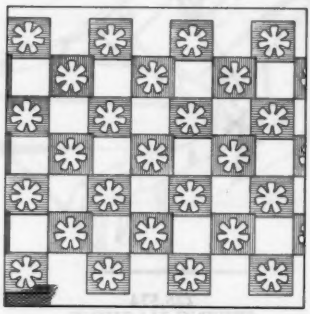
225,568
TIRE MOLD-PRESS OR THE LIKE
Robert D. McVay, Columbus, Ohio, assignor to United McGill Corporation, Columbus, Ohio
Filed May 14, 1971, Ser. No. 143,731
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—13

225,569
RIFLESCOPE
Donald J. Burris, Aurora, Colo., and John L. Maulbetsch, Northampton, Mass., assignors to Outdoor Sports Industries, Inc., Denver, Colo.
Filed Feb. 26, 1970, Ser. No. 21,649
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1

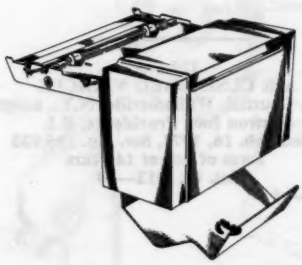
225,570
RIFLESCOPE
Donald J. Burris, Aurora, Colo., and John L. Maulbetsch, Northampton, Mass., assignors to Outdoor Sports Industries, Inc., Denver, Colo.
Filed Mar. 6, 1970, Ser. No. 21,761
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1



225,571
PAPER TOWELING
Marilyn J. Cross, Bay, Wis., assignor to Fort Howard Paper Company, Green Bay, Wis.
Filed Mar. 18, 1971, Ser. No. 125,910
Term of patent 14 years
Int. Cl. D5—*03*
U.S. Cl. D59—2

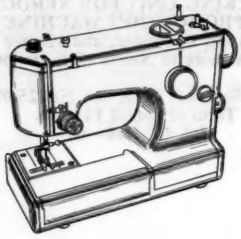


225,572
BOOK STACKING UNIT FOR XEROGRAPHIC REPRODUCTION MACHINE
Ruediger W. Knodt, Rochester, and Homer Korn, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sept. 21, 1970, Ser. No. 25,071
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1

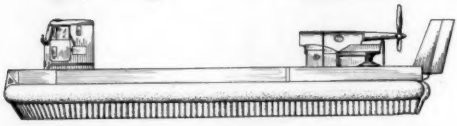


225,573
CAMERA SUPPORT BRACKET FOR A TRIPOD
Richard B. Jones, 930 W. Edgehill Road, San Bernardino, Calif.
Filed June 18, 1971, Ser. No. 154,705
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1

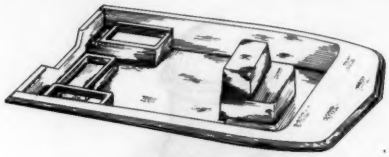
225,574
SEWING MACHINE
Kenneth Grange, London, England, Teiichi Nishigami, Moriguchi, Japan, and Charles A. Harrison, Chicago, Ill., assignors to Sears, Roebuck and Co., Chicago, Ill.
Filed Jan. 22, 1971, Ser. No. 109,088
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



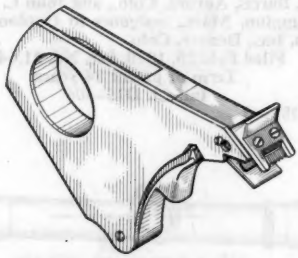
225,575
AIR CUSHIONED VEHICLE
Albert W. Courtial, Williamsville, N.Y., assignor to Textron Inc., Providence, R.I.
Filed Feb. 16, 1971, Ser. No. 115,933
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D71—1



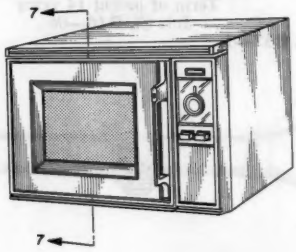
225,576
BOAT DECK
Jay A. Potsdam, Stuart, Fla., assignor to Gemini Marine, Inc., Stuart, Fla.
Filed Aug. 13, 1970, Ser. No. 24,465
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D71—1



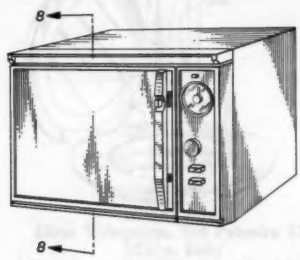
225,577
TAPE APPLICATOR
Elvin L. Boyce, Salt Lake City, Utah, assignor to Tape-Licator, Inc., Salt Lake City, Utah
Filed June 17, 1971, Ser. No. 154,252
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1



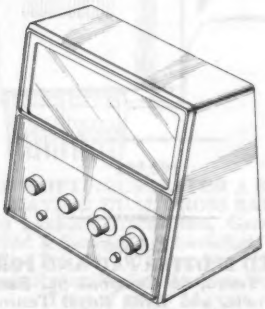
225,578
ELECTRONIC COOKING RANGE
Takao Miyake, Osaka, Japan, assignor to Sharp Kabushiki Kaisha (Sharp Corporation), Osaka, Japan
Filed Dec. 30, 1970, Ser. No. 26,699
Claims priority, application Japan July 10, 1970
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—4

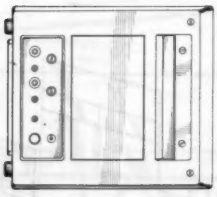


225,579
ELECTRONIC COOKING RANGE
Yoshio Suganoya and Takao Miyake, Osaka, Japan, assignors to Sharp Kabushiki Kaisha (Sharp Corporation), Osaka, Japan
Filed Dec. 31, 1970, Ser. No. 26,718
Claims priority, application Japan Oct. 1, 1970
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—4

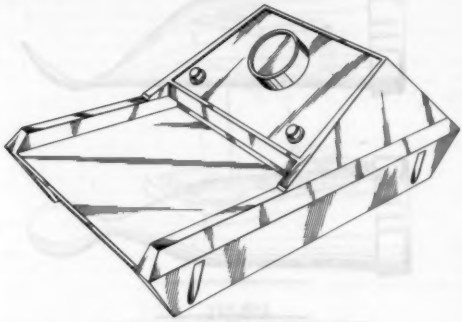


225,580
MEDICAL ANALYTIC HOUSING
Jean O. Reinecke, Pasadena, Calif., assignor to International Biophysics Corporation, Irvine, Calif.
Filed Mar. 5, 1971, Ser. No. 121,626
Term of patent 14 years
Int. Cl. D24—*01, 02*
U.S. Cl. D83—1

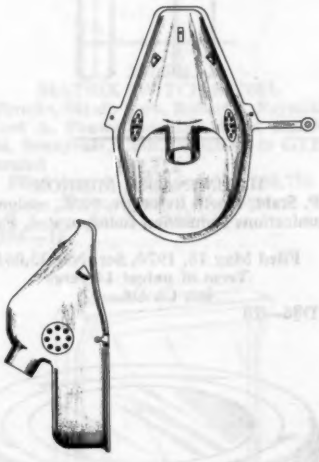




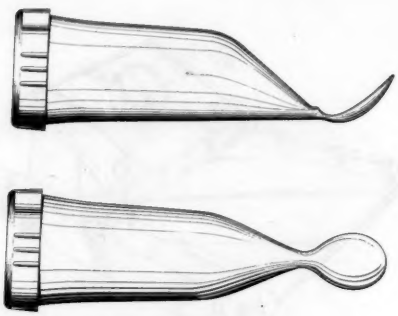
225,581
POWER SUPPLY
Bernard R. Danti, Lexington, and Paul E. Brefka, Southboro, Mass., assignors to Millipore Corporation, Bedford, Mass.
Filed Apr. 1, 1971, Ser. No. 130,548
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1



225,582
FULL FACE MASK
William R. King, Denver, Colo., assignor to Sandoz-Wander, Inc., Hanover, N.J.
Filed June 2, 1971, Ser. No. 149,409
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1

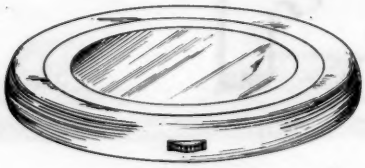


225,583
INFANT NURSING BOTTLE
Julio M. Lara, 8834 SW. 129th St., Miami, Fla. 33156
Filed July 30, 1971, Ser. No. 167,882
Term of patent 14 years
Int. Cl. D9—*01*; D24—*04*
U.S. Cl. D83—8



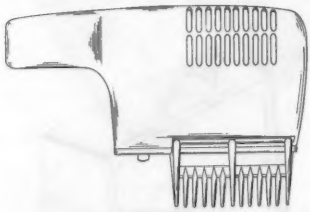
225,584
HANDLE FOR MEDICAL DIAGNOSTIC INSTRUMENTS
William S. Pilgrim, Port Byron, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.
Filed July 1, 1971, Ser. No. 159,085
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12

225,585
ILLUMINABLE MIRROR
Donald P. Stahl, North Bellmore, N.Y., assignor to Telecommunications Industries, Incorporated, Farmingdale, N.Y.
Filed May 18, 1970, Ser. No. 23,041
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D86—10

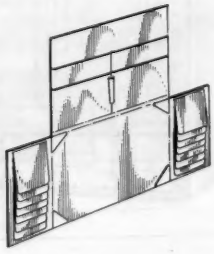


225,586
ILLUMINABLE COSMETIC CASE
Donald P. Stahl, North Bellmore, N.Y., assignor to Telecommunications Industries, Incorporated, Farmingdale, N.Y.
Filed May 18, 1970, Ser. No. 23,042
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D86—10

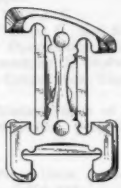
225,587
HAIR DRYER
James E. Tucker and Jay Doblin, Chicago, Ill., assignors to The Gillette Company, Boston, Mass.
Filed Apr. 15, 1971, Ser. No. 134,540
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10



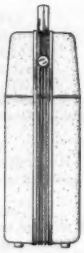
225,588
COMBINED BLOTTER PAD AND PORTFOLIO
Rex Clifford Testro, 56 Campbell St., East Kew, Victoria, Australia, and Keith Royal Testro, 22 Kellett Grove, Kew, Victoria, Australia
Filed Dec. 21, 1970, Ser. No. 26,598
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—3



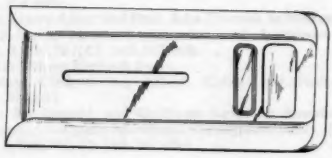
225,589
COIN HOLDER
Mogens Engel, 180 E. Prospect Ave., Mamaroneck, N.Y.
Filed Oct. 22, 1971, Ser. No. 191,967
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—3



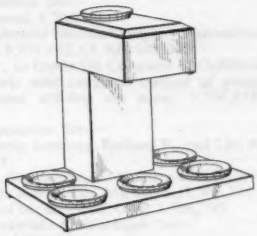
225,590
SUITCASE
Dino Valaguzza, Via Palestro 22, Milan, Italy
Filed Aug. 14, 1970, Ser. No. 24,492
Claims priority, application Italy Apr. 9, 1970
Term of patent 7 years
Int. Cl. D3—*01*
U.S. Cl. D87—5



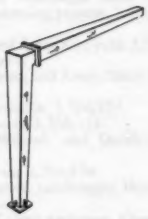
225,591
SPEED SHIFT HOUSING FOR A BICYCLE HAVING DUAL CROSS BARS
Hans-Jurgen Lannoch, Hochstetten, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany
Filed Feb. 19, 1971, Ser. No. 117,220
Claims priority, application Germany Sept. 16, 1970
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—1



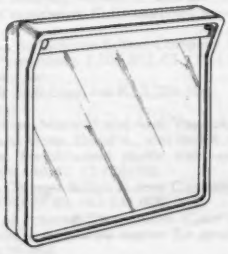
225,592
COMBINED COFFEE MAKER AND WARMER
William M. Bardeau, 44 Princess Margaret Blvd., Islington, Ontario, Canada
Filed Sept. 14, 1970, Ser. No. 24,981
Claims priority, application Canada Aug. 11, 1970
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D94—3



225,593
OVERHEAD SIGN SUPPORT
Clifton E. Jones, Flint, Mich., assignor to Anderson Safeway Guard Rail Corporation, Flint, Mich.
Filed June 7, 1971, Ser. No. 150,881
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12



225,594
MATRIX SWITCH PANEL
Philip L. Brooks, Menlo Park, Robert S. Reynolds, Cupertino, Kent A. Penwarden, Los Altos, and Suresh H. Gajwani, Sunnyvale, Calif., assignors to GTE Sylvania Incorporated
Filed Aug. 3, 1971, Ser. No. 168,790
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12



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TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF DECEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A B Billingsfors-Langed: *See—*
Persson, Leif Ramon, 3,706,618.

Aasen, T. F.; Hartman, Thomas E.; and Schaffel, Martin, to Copystatics Manufacturing Corporation. Exact length adjustment mechanism for copying machine. 3,706,490, Cl. 355-13.000.

Abbe, Robert C., to ADE Corporation. Capacitive guage. 3,706,919, Cl. 317-246.000.

Abbott, Augustus E., to United States of America, Atomic Energy Commission. Laminated plastic propeller. 3,706,511, Cl. 416-229.000.

Abbott Laboratories: *See—*
Plotnikoff, Nicholas Peter; Dren, Anthony Thomas; and Jochimsen, William George, 3,706,831.

Abu, Takao: *See—*
Okamoto, Tosiaki; Mori, Koziro; Yamazaki, Hayao; Abu, Takao; and Sato, Takefumi, 3,706,971.

Accashian, John, to United Aircraft Corporation. Redundant stabilizer support. 3,706,432, Cl. 244-83.00r.

ACF Industries, Incorporated: *See—*
Kalst, Manmohan S., 3,706,320.
Vicari, Felix J., 3,706,321.

Acquadro, Edward W.; and Monahan, Donald F., to International Business Machines Corporation. Dynamic keyboard data entry system. 3,706,973, Cl. 340-172.500.

Action Film, Inc.: *See—*
Skinner, James R.; Uitz, Mark O.; and Hait, Paul W., 3,706,439.

Addressograph-Multigraph Corporation: *See—*
Shimola, Howard G., 3,706,588.

ADE Corporation: *See—*
Abbe, Robert C., 3,706,919.

Adler, Jason A., to Royal Industries, Inc. Power supply for a stepping motor. 3,706,924, Cl. 318-685.000.

Aerojet-General Corporation: *See—*
Grakauskas, Vytautas, 3,706,788.

Agence Nationale de Valorisation de la Recherch (ANVAR): *See—*
Roblin, Gerard; and Nomarski, Georges, 3,706,492.

Agfa Gevaert A.G.: *See—*
Theer, Anton, 3,706,427.

Agfa-Gevaert Aktiengesellschaft: *See—*
Engelsmann, Dieter; Hackenberg, Hubert; and Deeg, Karl, 3,706,268.

Aguirre, Enrique Renteria: *See—*
Solomka, Monroe M.; and Aguirre, Enrique Renteria, 3,706,829.

Air Products and Chemicals, Inc.: *See—*
Kadi, Frank J.; Longsworth, Ralph C.; and Meier, Richard N., 3,706,208.
Moyer, Ronald C.; and Uffner, Melville W., 3,706,590.

Airco, Inc.: *See—*
Wallouch, Rudolph W., 3,706,596.

Aisin Seiki Company Limited: *See—*
Okamoto, Tosiaki; Mori, Koziro; Yamazaki, Hayao; Abu, Takao; and Sato, Takefumi, 3,706,971.

Aisin Seiki Kabushiki Kaisha: *See—*
Inose, Hideo, 3,706,262.
Nyunoya, Mizuo, 3,706,360.

Ajichi, Yoshio: *See—*
Kawakami, Takaya; Kitamura, Toshinori; Ajichi, Yoshio; and Ono, Masayoshi, 3,706,949.

Akira, Sato: *See—*
Shiba, Keisuke; Sueyoshi, Tohru; Akira, Sato; Kubodera, Seiiti; and Tsubota, Motohiko, 3,706,566.

Akutagawa, Susumu: *See—*
Moroe, Tatsuo; Komatsu, Akira; Akutagawa, Susumu; Sakaguchi, Toshiaki; and Matsuyama, Hirokazu, 3,706,809.

Akzona Incorporated: *See—*
Leibbrand, Bertus; Mertens, Johan J.; Ploeger, Harm A.; Sluijters, Robert; and Van Assendelft, Leendert, 3,706,192.

Alaimo, Robert J.; and Pelosi, Stanford S., Jr., to Morton-Norwich Products, Inc. Anthelmintic thiocyanatobenzothiazoles. 3,706,759, Cl. 260-305.000.

Albon, Colin: *See—*
Vessey, Clifford A.; Albon, Colin; and Holker, Kenneth, 3,706,603.

Albrecht, Harry Allen; and Plati, John Thomas, to Hoffmann-La Roche Inc. 5-Amino-4-methoxyisoxazoles and 3-amino-4-methoxyisoxazoles. 3,706,761, Cl. 260-307.00h.

Albright & Wilson Limited: *See—*
Vessey, Clifford A.; Albon, Colin; and Holker, Kenneth, 3,706,603.

Albright, Jay Donald; and Goldman, Leon, to American Cyanamid Company. 4-Cyano-3β-ethoxy-3-secoyohimbano [17,18-c]isoxazole. 3,706,760, Cl. 260-307.00d.

Alexander, Jack F., to Computer Terminal Corporation. Deflection compensation system. 3,706,905, Cl. 315-21.0ch.

Allen & Hanburys Limited: *See—*
Bays, David Edmund, 3,706,768.

Alley, Robert P., to General Electric Company. Automatically resettable thermal switch. 3,706,952, Cl. 337-348.000.

Alley, Starling K., Jr., to Union Oil Company of California. Chelated metal-polyphosphoric acid catalysts, method of preparation and isomerization process utilizing the same. 3,706,815, Cl. 260-638.650.

Allied Chemical Corporation: *See—*
Anello, Louis Gene; Sweeney, Richard F.; and Litt, Morton Herbert, 3,706,773.
Chandrasekaran, Swayambu; and Mueller, Max B., 3,706,723.
Kremers, Frank J.; and Rhodes, Michael S., 3,706,771.
Lichstein, Bernard M.; and Wolf, Cyril, 3,706,795.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Sundberg, Yngve, 3,706,399.

Allvin, Bertil Hilmer, to Vallak, Enn. Hot tops and mixture of materials therefor. 3,706,682, Cl. 260-17.200.

Amato, Richard A., to Electrospin Corporation, mesne. Spinning head. 3,706,193, Cl. 57-58.890.

Ambrose, Charles J.: *See—*
Olsen, Larry C.; Seeman, Stephen E.; Griffin, Bobby I.; and Ambrose, Charles J., 3,706,893.

American Cyanamid Company: *See—*
Albright, Jay Donald; and Goldman, Leon, 3,706,760.
Brabander, Herbert Joseph; and Wright, William Blythe, Jr., 3,706,810.
McCoy, Mary Eloise; and Redin, Gunnar Sigurd, 3,706,833.
Siegele, Frederick Herman, 3,706,717.
Suffern, Donald Bruce Borders; Osterberg, Arnold Curtis; and Wallo, Kenneth George, 3,706,835.

Ammerman, Gale R., to Mississippi State University Development Foundation, Inc. Fish skinning process. 3,706,333, Cl. 146-228.000.

Amo, Kiyoyuki: *See—*
Fukunaga, Masao; and Amo, Kiyoyuki, 3,706,135.

Amos, Brian Franklyn: *See—*
Davis, Anthony Charles; and Amos, Brian Franklyn, 3,706,195.

AMP Incorporated: *See—*
Bunnell, Edward Dennman, 3,706,955.
Gillespie, James Francis, 3,706,121.
Hoffman, Joseph Willard; and Demler, Henry William, Sr., 3,706,219.
Lockard, Joseph Larue, 3,706,874.
Sweeney, Joseph Patrick; and Rueger, Herman, 3,706,134.

Andersen, Viggo S.: *See—*
Woodruff, Edward T.; and Andersen, Viggo S., 3,706,599.

Anderson, Arvid B., to Bishop Freeman Company. Hand iron. 3,706,146, Cl. 38-75.000.

Anderson Bros. Mfg. Co.: *See—*
Talarico, Lawrence J., 3,706,183.

Anderson, C. H.; and Griffiths, Colin, to Pullman Incorporated. Vacuum degassing unit. 3,706,449, Cl. 266-34.00v.

Anderson, James J.; Byrd, Wendell M., Jr.; and Camacho, Vasco G., to Mobil Oil Corporation. Novel phosphorus and halogen-containing compounds. 3,706,821, Cl. 260-951.000.

Anderson, James Mitchell, to VanHeerden, Philip; in his Capacity of minister of Water Development for the Government of Rhodesia. Hydrological recorder. 3,707,000, Cl. 346-33.000.

Anderson, Paul L.; Houlihan, William J.; and Manning, Robert E., to Sandoz-Wander, Inc. Hydrazone derivatives of 3-substituted amino-6-hydrazino pyridazines. 3,706,744, Cl. 260-250.00a.

Anderson, Ralph F. Method and apparatus for closing containers. 3,706,175, Cl. 53-39.000.

Anello, Louis Gene; Sweeney, Richard F.; and Litt, Morton Herbert, to Allied Chemical Corporation. Fluorocarbon compounds. 3,706,773, Cl. 260-408.000.

Angus, Alexander C., to McGraw-Edison Company. Quiet turn-on circuit for carbon microphones. 3,706,852, Cl. 179-1.00a.

Aptek Industries, Inc.: *See—*
Knapp, Philip B.; and Zogg, Jon R., 3,706,396.

Arai, Yasusuke: *See—*
Ito, Fukuzo; Sekine, Masaoki; and Arai, Yasusuke, 3,706,422.

Argraves, Neil E.; and Mann, David A., said Neil & Argraves assor. to Saleeba, Wallace. Prefabricated plastic stairway and method of manufacture. 3,706,170, Cl. 52-189.000.

Arne, Christian, to Chicago Bridge & Iron Company. Stress oriented corrugations. 3,706,627, Cl. 161-131.000.

Arond, Lester H., to Polaroid Corporation. Color diffusion transfer film unit containing a temporary barrier for developer restrainers. 3,706,557, Cl. 96-29.00d.

Arrigo, Joseph T., to Universal Oil Products Company. N-(2,2-di-substituted-vinyl)-arylimines. 3,706,802, Cl. 260-566.00f.

Arsem, Alvan D.; Schwartz, Harold O.; and Ippolito, Anthony C., to Wurlitzer Company, The. Automatic rhythmic chording unit. 3,706,837, Cl. 84-1.030.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Uno, Naoyuki; and Tokutomi, Seijiro, 3,706,266.

Ashland Oil, Inc.: *See—*
Hartlage, James A.; and McKillip, William J., 3,706,800.
McKillip, William J.; and Clemens, Lawrence M., 3,706,797.

Astro Music Company, Inc.: *See—*
Morin, Van, 3,706,254.

Ateliers de Constructions Electriques de Charleroi (ACEC) Societe Anonyme: *See—*
Rouet, Paul, 3,706,848.

Athey, Stuart E.: *See—*
Fox, Gerald B.; Dudley, Wray E.; and Athey, Stuart E., 3,706,317.

Atlantic Richfield Company: *See—*
Wang, Ting-I, 3,706,763.

Audi Nsu Auto Union Aktiengesellschaft: *See—*
Max, Ruf, 3,706,514.

Audiomatic Techniques Inc.: *See—*
Toensing, Eyvand E., 3,706,424.

Avco Corporation: *See—*
O'Connor, John A., 3,706,510.

Axisa, Walter, to Gemini Investment Etablissement. Bracelets and the like. 3,706,117, Cl. 24-206.000.

Aya, Masahiro: *See—*
Hirane, Seiichi; Aya, Masahiro; and Kishino, Shigeo, 3,706,832.

Azzola, Roberto, to Saiag S.p.A. Industria Articoli Gomma. Extruded flexible sealing strip. 3,706,628, Cl. 161-159.000.

Babcock & Wilcox Company, The: *See—*
Clark, Frank Emmons, 3,706,247.

Bachman, Gustave Bryant; and Eisenstein, Stephen E., to Purdue Research Foundation. Production of nitroalkanes. 3,706,808, Cl. 260-644.000.

Bachura, Richard A., to Dow Corning Corporation. Process for stabilizing a mechanically frothed urethane foam by using a silicon surfactant composition. 3,706,681, Cl. 260-2.5ah.

Backderf, Richard H., to Goodyear B. F., Company, The. Emulsion polymerization of acryloxyalkylsilanes with alkylacrylic esters and other vinyl monomers. 3,706,697, Cl. 260-29.20m.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Graf, Fritz; and Koenig, Horst, 3,706,770.

Baeza, Armando M., to Mattel, Inc. Jointer figure toy having cooperating bearing surfaces of duplicate size and contours. 3,706,155, Cl. 46-151.000.

Bafford, Richard Anthony, to Pennwalt Corporation. Auto-oxidation of aldehydes in the presence of chloroformates. 3,706,783, Cl. 260-463.000.

Baker, David R., to Fibreboard Corporation. Air permeable container. 3,706,410, Cl. 229-16.00r.

Balmer, John D.; and Kendall, Jerry A., to Berg Electronics, Inc. Insulation stripper for ribbon cable. 3,706,241, Cl. 81-9.510.

Bandy, Leon D. Foot propelled unicycle. 3,706,157, Cl. 46-220.000.

Baniadam, Mahmood; and Morando, Jorge A., to Fairchild Industries, Inc. Fluid coupling. 3,706,318, Cl. 137-614.030.

Baral, William J.: *See—*
Mickelson, Grant A.; Jones, Darryl L.; and Baral, William J., 3,706,693.

Barbot, Claude, to Lely, C. van der, N.V. Raking implements. 3,706,191, Cl. 56-377.000.

Barilli, Filippo: *See—*
Cozza, Giorgio; Bottai, Gabriele; and Barilli, Filippo, 3,706,531.

Barmby, David S.: *See—*
Kirsch, Francis William; Barmby, David S.; and Potts, John D., 3,706,814.

Barone, Frank J.; and Tolliver, Donald L. Silicon-silicon dioxide interface of predetermined space charge polarity. 3,706,918, Cl. 317-235.00r.

Baronnet, Pierre: *See—*
Schelle, Axel; and Baronnet, Pierre, 3,706,386.

Barrager, Stephen M.; Bate, Geoffrey; and Smith, Sidney H., to International Business Machines Corporation. Method and apparatus for testing batch fabricated magnetic heads during manufacture utilizing magnetic fields generated by other magnetic heads. 3,76,926, Cl. 324-34.00r.

Barrow, Robert B.; and Terkelsen, Bruce E., to United Aircraft Corporation. Radiation shield for investment molds. 3,706,338, Cl. 164-357.000.

Barth, Hans; Knausenberger, Martin; Lange, Henner; Menz, Hans-Udo; and Griess, Wilhelm; deceased (by Griess-Tomtschuk, Irene; and by Gordt-Griess, Hanna; legal representatives), to Lever Brothers Company. Detergent composition with thermo-controlled foamin capacity. 3,706,675, Cl. 252-539.000.

Bartles, Edward C.; and Fraim, Raymond A., to Eastman Kodak Company. Control system. 3,706,339, Cl. 161-12.000.

Basa, Napoleon A. Manually operated fluid pressure driven rotary drive. 3,706,202, Cl. 60-54.50r.

BASF Wyandotte Corporation: *See—*
Vogt, Herwart C.; and Davis, Grosse Ile Pauls, 3,706,683.

Bass, Jon D.: *See—*
Gilman, Paul B., Jr.; and Bass, Jon D., 3,706,569.

Bassnett, Arthur J.: *See—*
Beck, Emanuel A.; and Bassnett, Arthur J., 3,706,928.

Batcho, Andrew David; Berger, Julius; Furlenmeier, Andre; Keller, Oscar; Pecherer, Benjamin; Schocher, Arno Johannes; Spiegelberg, Hans; and Vaterlaus, Bruno Peter. Antibiotics and processes for their preparation. 3,706,729, Cl. 260-210.00r.

Bate, Geoffrey: *See—*
Barrager, Stephen M.; Bate, Geoffrey; and Smith, Sidney H., 3,706,926.

Batista, Roy I.: *See—*
Hagan, Melvin A.; and Batista, Roy I., 3,706,539.

Baumann, Hans-Peter; and Keller, Robert Christian, to Sandoz Ltd. Process for the dyeing of textile material with dye carrier of predominantly higher boiling alkyl benzenes. 3,706,530, Cl. 8-174.000.

Bay Alarm Company: *See—*
Westphal, Bruce A., 3,706,987.

Bayer Aktiengesellschaft: *See—*
Dietrich, Werner; and Stammheim, Andres, 3,706,678.
Hagemann, Hermann, 3,706,778.
Hoffmann, Hellmut; and Hammann, Ingeborg, 3,706,820.

Bayle, Guy P.; Smyth, Richard K.; and Gustafson, Robert D., to North American Aviation, Inc. Vehicle controller employing passive horizon sensor. 3,706,988, Cl. 343-6.00r.

Bays, David Edmund, to Allen & Hanburys Limited. Xanthone derivatives. 3,706,768, Cl. 260-335.000.

BDH Pharmaceuticals Limited: *See—*
Stephenson, Oliver; Wild, Anthony Musgrave; and Hayman, David Frank, 3,706,782.

Be Vard, Ralph E.: *See—*
Wright, James R.; and Be Vard, Ralph E., 3,706,242.

Becher, Jan; and Ullman, Edwin F., to Synvar Associates. Free radical pH indicators. 3,706,537, Cl. 23-230.00r.

Beck, Emanuel A.; and Bassnett, Arthur J., to United States of America, Navy. Coherent frequency multiplier and encoder. 3,706,928, Cl. 325-33.000.

Beckman Instruments, Inc.: *See—*
Cosgrove, Richard E.; Krull, Irwin H.; and Mask, Charles A., 3,706,649.

Becton, Dickinson and Company: *See—*
Rapoza, Edward J.; Siegel, Maxwell E.; Estelle, Weems E.; Petrucci, Pasquale M.; Linarducci, Joseph S.; Hamma, John; and Montgomery, John, 3,706,499.

Bell & Howell Company: *See—*
Neff, Joseph J., 3,706,423.
Notley, Norman T., 3,707,001.
Yamada, Yoshikazu; Sund, Joseph Tat-Hin; and Logue, Daniel R., 3,706,276.

Bell, Cyril Ove Robert; and Jones, Neville Murray, to Monsanto Chemicals Limited. Preparation of magnesium-containing lubrication oil detergents. 3,706,665, Cl. 252-32.7hc.

Bell Telephone Laboratories, Incorporated: *See—*
Emshwiller, MacLellan, 3,706,881.
Fisher, George Myles Cordell; Froehlich, Fritz Edgar; Levin, William; McDowell, Blake, III; and O'Boyle, Leonard Edward, 3,706,850.
Subramanian, Mahadevan, 3,706,931.
Tewsbury, Stuart Keene, 3,706,944.

Bella, Davide Della: *See—*
Teotino, Uberto; and Bella, Davide Della, 3,706,750.

Bence, Patrick J. All-rapeseed oil shortenings. 3,706,578, Cl. 99-118.00r.

Bender, F., Limited: *See—*
Whatmore, Robert, 3,706,997.

Benton, Richard H.: *See—*
Gonzales, Michael; Benton, Richard H.; and Moore, William G., 3,706,457.

Bentz, Raymond L.: *See—*
Taylor, Lawrence B.; Bentz, Raymond L.; and Porter, Robert B., 3,706,535.

Beran, Wilhelmine, to Laevosan-Gesellschaft Chem. Pharm. Industrie, Franck & Dr. Freudl. Steroid compounds effective against, cardiac conditions and method of their preparation. 3,706,727, Cl. 260-210.500.

Berg Electronics, Inc.: *See—*
Balmer, John D.; and Kendall, Jerry A., 3,706,241.

Berger, Harold J.; and Goldsmith, Jerry G. Combination blood sampling vacuum syringe centrifuge container and specimen cup. 3,706,305, Cl. 128-2.00f.

Berger, Harold J.; and Goldsmith, Jerry G. Combination blood sampling vacuum syringe centrifuge container and specimen cup. 3,706,306, Cl. 128-2.00f.

Berger, Herbert; Gall, Rudi; Merdes, Hartmut; Stach, Kurt; Sauer, Winfriede; and Vomel, Wolfgang, to Boehringer Mannheim GmbH. Certain nitrofuryl(hydrazino)pyrimidines. 3,706,745, Cl. 260-256.40n.

Berger, Julius: *See—*
Batcho, Andrew David; Berger, Julius; Furlenmeier, Andre; Keller, Oscar; Pecherer, Benjamin; Schocher, Arno Johannes; Spiegelberg, Hans; and Vaterlaus, Bruno Peter, 3,706,729.

Bergstrom, Sune; and Sjovall, Jan. PGF_{2a}. 3,706,789, Cl. 260-468.00d.

Bergum, Bernard C.; and Youngquist, John A., to ESB Incorporated. Duplex electrode construction using continuous metal carrier strip having at least one nonreactive metal side. 3,706,616, Cl. 136-175.000.

Berman, Herbert J.: *See—*
Tangen, Oddvar; Berman, Herbert J.; and Marfey, Peter, 3,706,661.

Bernett, Frank E.; and Kleinhans, Robert J., to Tile Council of America, Inc. Grouting composition. 3,706,696, Cl. 260-29.70e.

Bertin & Cie: *See*—
Thomas-Collignon, Jean Charles Marie, 3,706,476.

Besier, Emil E.; and Knauer, Warren L., Jr., to Motorola, Inc. Film format and stop circuit for an electronic video recording player. 3,706,844, Cl. 178-7.200.

Bevier, Charles W., to Weben Industries, Inc. Vehicle washing device. 3,706,109, Cl. 15-21.00e.

Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; Schraven, Eckhard; and Stachel, Adolf; deceased (by Stachel, Inge; and by Stachel, Sophie; heirs). 3-(α-Substituted amono-β_{π}-alkoxybenzoxy-propyl) 6,7-or-6,7,8-alkoxy-1,2,3-benzotriazine-4(3H)-ones. 3,706,739, Cl. 260-247.200.

Bharali, Utpalananda: *See*—
Rapp, Adolph Karl; and Bharali, Utpalananda, 3,706,889.

Bianchi, John: *See*—
Rand, Henry T.; Bohacz, Maxine; Lyon, Jerry; Pitman, Robert L.; Shaw, Donald N.; and Bianchi, John, 3,706,867.

Biby, Howard A.: *See*—
Landry, Delphin H.; and Biby, Howard A., 3,706,466.

Bickel, Hans: *See*—
Bosshardt, Rolf; Fechtig, Bruno; Mueller, Johannes; Peter, Heinrich; and Bickel, Hans, 3,706,746.

Bickford, Jerome R.; and Nicholson, James O., to International Business Machines Corporation. Optical card reader. 3,706,887, Cl. 250-219.0dc.

Bickford, William J.; and Cease, Richard G., to Raytheon Company. Deviation modifier. 3,706,946, Cl. 332-23.000.

Bidell, Frederick W.; Herold, Carl D., Jr.; and Lindholm, James H., to Sylvania Electric Products, Inc. Synchronizing systems in the presence of noise. 3,706,933, Cl. 325-479.000.

Biland, Hans Rudolf: *See*—
Dunnenberger, Max; and Biland, Hans Rudolf, 3,706,798.

Birchall, William R.: *See*—
Broering, Leo H.; and Birchall, William R., 3,706,720.

Bishop Freeman Company: *See*—
Anderson, Arvid B., 3,706,146.

Black and Decker Manufacturing Company, The: *See*—
William, Alan George, 3,706,332.

Black, H. R., Company: *See*—
Markwick, John P., 3,706,378.

Blackwell, John; Gumprecht, William Henry; and Starn, Roy Emerson, Jr., to Du Pont de Nemours, E. I., and Company. Water swollen cellulose dyeing with high molecular weight disperse dye in a glycol ether solution. 3,706,525, Cl. 8-21.00c.

Blake, Edward S., to Monsanto Company. Substituted amides. 3,706,796, Cl. 260-558.00d.

Blanchard, Robert R.; Kennedy, James S.; and Roberts, Reginald F., to Dow Chemical Company, The. Process for the dehydrochlorination of chlorinated polyolefins. 3,706,724, Cl. 260-94.9gd.

Blanchenot, John P., to International Telephone and Telegraph Corporation. Coaxial cable connector. 3,706,958, Cl. 339-177.00e.

Blanich, Steve R. Pump operated removal device for cleaning apparatus. 3,706,377, Cl. 209-446.000.

Blatter, Herbert Morton: *See*—
Rosen, Melvin Harris; and Blatter, Herbert Morton, 3,706,769.

Bleile, Robert F. Staple for sod and erosion control mattings. 3,706,115, Cl. 24-87.00c.

Block, Seymour S.: *See*—
Takeda, Hiroshi; Schuller, Walter H.; Lawrence, Ray V.; and Block, Seymour S., 3,706,762.

Blum, Josef, to Sewall, Ivan, Inc. Automatic filling apparatus for cell washing centrifuge. 3,706,413, Cl. 233-26.000.

Blumberg, Shmaryahu: *See*—
Katchalski, Ephraim; Goldstein, Leon; Levin, Yehuda; and Blumberg, Shmaryahu, 3,706,633.

Bobinski, Jack; and Picard, Jean P., to United States of America, Army. Novel combustible cartridge case and process therefor. 3,706,280, Cl. 102-43.000.

Boehringer Mannheim GmbH: *See*—
Berger, Herbert; Gall, Rudi; Merdes, Hartmut; Stach, Kurt; Sauer, Winfriede; and Vomel, Wolfgang, 3,706,745.
Fauland, Erich; Kampe, Wolfgang; Thiel, Max; Juhran, Wolfgang; Dietmann, Karl; and Stork, Harald, 3,706,728.

Bohacz, Maxine: *See*—
Rand, Henry T.; Bohacz, Maxine; Lyon, Jerry; Pitman, Robert L.; Shaw, Donald N.; and Bianchi, John, 3,706,867.

Bohemia Lumber Company, Inc.: *See*—
Stewart, Faye H., 3,706,385.

Bohm, Heinz-Dieter; Muller, Unna Wolfgang; and Hobert, Herbert, to Maschinenfabrik Stromag G.m.b.H. Clutch operator with hydrostatic bearings. 3,706,365, Cl. 192-85.0ca.

Boise Cascade Corporation: *See*—
Bokovoy, Ronald D., 3,706,350.
Myers, Albert F., 3,706,239.

Boje, Kurt: *See*—
Seiler, Claus-Dietrich; Vahlensieck, Hans-Joachim; and Boje, Kurt, 3,706,776.

Bokovoy, Ronald D., to Boise Cascade Corporation. Fully automatic locking interaxle differential for tandem vehicles. 3,706,350, Cl. 180-24.090.

Bolton, William Robert Fossey: *See*—
Ferguson, Colin Campbell; and Bolton, William Robert Fossey, 3,706,352.

Bonafino, Edward J.; Doolittle, Frederick W.; Hayes, Charles U.; and Yarrington, James C., to International Business Machines Corporation. Conveyor system. 3,706,370, Cl. 198-76.000.

Boor, John, Jr.: *See*—
Hull, Colin G.; and Boor, John, Jr., 3,706,713.

Booth, Llewellyn Delphin, to Dow Chemical Company, The. Foamed polyurethanes prepared from diphenols and polyisocyanates. 3,706,680, Cl. 260-2.5am.

Borden Company, The: *See*—
Whitworth, Anthony James; Lees, William Arthur; Tung, Stephen Yi-Sun; and Hajto, Ernest Anthony, 3,706,581.

Borel, Robert J.; Corey, Leonard S.; Rucharski, Thaddeus W.; Stocking, John L.; and Thomas, Frederick H., to Eastman Kodak Company. Web transport apparatus. 3,706,406, Cl. 226-95.000.

Borg-Warner Corporation: *See*—
Zimmer, George A., 3,706,199.

Borneman, Karl J.; Byler, Eichard E.; Roberts, Paul G.; and Smalinskas, Stepas, to Ford Motor Company. Four-speed ratio automatic power transmission mechanism. 3,706,240, Cl. 74-869.000.

Bosshardt, Rolf; Fechtig, Bruno; Mueller, Johannes; Peter, Heinrich; and Bickel, Hans, to Ciba-Geigy Corporation. O-desacetyl derivatives of 7-N-acylamino-cephalosphoranic acids. 3,706,746, Cl. 260-243.00c.

Bossler, Alfred T.: *See*—
Brightmire, Glenn K.; Bossler, Alfred T.; Burnell, Arthur E.; and Helms, August R., 3,706,330.

Bottai, Gabriele: *See*—
Cozza, Giorgio; Bottai, Gabriele; and Barilli, Filippo, 3,706,531.

Bouisse, Jean Marie Germain; Martel, Charles Etienne Georges; and Villey-Desmeserets, Franck Pierre Antoine, to Etat Francais. Tracer device for a rocket. 3,706,283, Cl. 102-87.000.

Bouligny, R. H., Inc.: *See*—
King, Charles S. W.; and Pierce, John H., 3,706,407.

Boult, David Luard, to British Insulated Callender's Cables Limited. Telecommunication cables. 3,706,838, Cl. 174-25.00r.

Bowman, Bobby R.: *See*—
Drelich, Arthur H.; and Bowman, Bobby R., 3,706,595.

Boxley, Denis V.: *See*—
Folson, Henry J.; Boxley, Denis V.; Kingsbury, James; Kraitzer, Shlomo; Soulakis, George; and Whittington, Jimmie L., 3,706,153.

Boyd, David M.: *See*—
Greenwood, Arthur R.; Heinze, Walter W.; Schnitta, Edward; and Boyd, David M., 3,706,536.

Boyer, Fred S. Locking devices. 3,706,390, Cl. 220-25.000.

Brabander, Herbert Joseph; and Wright, William Blythe, Jr., to American Cyanamid Company. N-morpholinoalkyl-thieno[3,2-b] pyrrole-5-carboxamides. 3,706,810, Cl. 260-247.100.

Brack, Karl, to Hercules Incorporated. Cross-linkable polymer compositions comprising ethylenically unsaturated polymers. 3,706,685, Cl. 260-22.00r.

Brack, Karl, to Hercules Incorporated. Cross-linkable polymer compositions comprising ethylenically unsaturated polymer. 3,706,715, Cl. 260-77.5ac.

Brannan, James R., to Du Pont de Nemours, E. I., and Company. Chromium plating from an organic/aqueous medium. 3,706,640, Cl. 204-51.000.

Brannan, James R., to Du Pont de Nemours, E. I., and Company. Preparation of chromium plating bath. 3,706,642, Cl. 204-51.000.

Bremner, James Duncan; and McLellan, Ian Alexander, to Imperial Chemical Industries Limited. Melt spinning process. 3,706,826, Cl. 264-176.00f.

Bretti, Franco, to Olivetti, Ing., C., & C., S.p.A. High speed serial printing device for typewriters, teleprinters, calculating machines, accounting machines and the like. 3,706,367, Cl. 197-55.000.

Brewer, Gerald L., to Universal Oil Products Company. Thermal incineration unit. 3,706,533, Cl. 23-277.00c.

Brewer, John C., to Garbalizer Corporation of America. Vehicle body-shell processing plant. 3,706,289, Cl. 110-18.00r.

Bricard, Pierre: *See*—
Petit, Gerard; and Bricard, Pierre, 3,706,986.

Bride, John Edwin: *See*—
Huba, Francis; and Bride, John Edwin, 3,706,641.

Bride, John Edwin, to Du Pont de Nemours, E. I., and Company. Preparing plating bath containing chromic compound. 3,706,636, Cl. 204-51.000.

Bride, John Edwin, to Du Pont de Nemours, E. I., and Company. Chromium plating bath containing chromic compound. 3,706,637, Cl. 204-51.000.

Bride, John Edwin, to Du Pont de Nemours, E. I., and Company. Chromium plating bath for rotary receptacle plating. 3,706,638, Cl. 204-51.000.

Bride, John Edwin; and Huba, Francis, to Du Pont de Nemours, E. I., and Company. Rejuvenated chromium plating medium containing chromic compound. 3,706,639, Cl. 204-51.000.

Briggs, Eugene C., to Koehring Company. Portable heater. 3,706,446, Cl. 263-19.00a.

Brightmire, Glenn K.; Bossler, Alfred T.; Burnell, Arthur E.; and Helms, August R., to Rosen, Jacob J. Method and means for providing substantially continuous resilient article with bendable skelton and resultant article. 3,706,330, Cl. 140-1.000.

Brillaud, Andre R.; and Gallin, Lawrence F., to Systematic Research & Development Corporation. Multi-use dispensing device. 3,706,140, Cl. 34-60.000.

Bringolf, Richard G. Flexible conduit. 3,706,326, Cl. 138-129.000.

Brisse, Jacques Daniel Philippe; and Joguet, Jean-Claude, to International Standard Electric Corporation. Constant-duty transponder. 3,706,992, Cl. 343-6.8lc.

Bristol-Myers Company: *See—*
Johansen, Bent Georg, 3,706,315.

British Insulated Callender's Cables Limited: *See—*
Boult, David Luard, 3,706,838.

British Iron and Steel Research Association, The: *See—*
Salter, Frank Michael; and Dibley, John Edwin, 3,706,448.

British Steel Corporation: *See—*
Pennington, John Stanley, 3,706,331.

Britt, Jack, to Rolls-Royce Limited. Rotary bladed structure for a fluid flow machine. 3,706,509, Cl. 415-131.000.

Britton, Leon R.; and Semerjian, Joseph K., to Seeburg Corporation of Delaware, The. Multiple switch assembly for vending machine selecting apparatus with improved master switch control. 3,706,863, Cl. 200-5.00r.

Broadhead, Sharon Ann, nee Rulon, to Stauffer Chemical Company. Lactalbumin phosphate as a replacement for egg white. 3,706,575, Cl. 99-114.000.

Broering, Leo H.; and Birchall, William R., to National Distillers and Chemical Corporation. Continuous process for the production of alfin polymers. 3,706,720, Cl. 260-82.100.

Brother Kogyo Kabushiki Kaisha: *See—*
Hishida, Yukio; Nakai, Toshio; and Kuzuya, Susumu, 3,706,366.

Brotzmann, Karl: *See—*
Knuppel, Helmut; Brotzmann, Karl; Fassbinder, Hans-Georg; Savard, Guy; and Lee, Robert, 3,706,549.

Brown, Cicero C. Pipe handling system for use in well drilling. 3,706,347, Cl. 175-85.000.

Bruckner, Samuel R., to Xetca, Inc. Programmed control system for punching machine. 3,706,249, Cl. 83-69.000.

Bruckner-Apparatebau Michelstadt GmbH: *See—*
Schuierer, Manfred, 3,706,138.

Brumlik, George C. Construction elements for the assembly of molecular models, toys and the like. 3,706,139, Cl. 35-18.00a.

Brunner, Guido, to Shell Oil Company. Submarine dredging apparatus. 3,706,142, Cl. 37-56.000.

Bryson, Millard C.; McKinney, Joel D.; and Murphy, James R., to Gulf Research & Development Company. Fluid catalytic cracking processes and means. 3,706,654, Cl. 208-74.000.

Buckbee-Mears Company: *See—*
Olson, Roger A.; and Osero, Norman M., 3,706,983.

Bucksch, Herbert; and Koch, Helmut, to Rheiner Maschinenfabrik Windhoff Akt.-Ges. Machine for the ballasting of railroad tracks. 3,706,145, Cl. 37-105.000.

Budzyna, Joseph M., to North American Rockwell Corporation. Shuttle binder. 3,706,327, Cl. 139-187.000.

Buehler, Arthur; and Steinlin, Felix, to Ciba-Geigy A.G. Process for the dyeing of synthetic polyamides in bulk. 3,706,698, Cl. 260-37.0np.

Bulgrin, Walter William. Method and apparatus for producing vehicle rims. 3,706,120, Cl. 29-159.100.

Bunnell, Edward Dennman, to AMP Incorporated. Electrical cable having integral terminals. 3,706,955, Cl. 339-28.000.

Bunte, William S.; and De Gasperis, Lino E., to Egan Machinery Company. Extrusion die deckle means. 3,706,518, Cl. 425-381.000.

Burbank, John Emerson, III, to Wiltek, Inc. Magnetic card data recorder/reproducer. 3,706,860, Cl. 179-100.2ca.

Burch, Randolph. Feeding and conveying device for automatic nailing machines. 3,706,408, Cl. 227-45.000.

Burg, Raymond H.: *See—*
Lohmann, Arthur M.; Spurbeck, King; and Burg, Raymond H., 3,706,282.

Burkhardt, Jurgen: *See—*
Nitzsche, Siegfried; Burkhardt, Jurgen; and Wegehaupt, Karl-Heinrich, 3,706,591.

Burnell, Arthur E.: *See—*
Brightmire, Glenn K.; Bossler, Alfred T.; Burnell, Arthur E.; and Helms, August R., 3,706,330.

Burness, Donald M.: *See—*
Herz, Arthur H.; Burness, Donald M.; and Seus, Edward J., 3,706,562.

Burrows, Clifford G.; Magnuson, John E.; and Giese, Ludi, to Canadian Kenworth Ltd. Power system for loading an empty trailer onto a tractor or for loading pre-loaded trailers onto a fifth wheel of the tractor. 3,706,464, Cl. 280-401.000.

Burtin, James D. Fill cap assembly for sandblasting machines or the like. 3,706,166, Cl. 51-12.000.

Bush, Clarence C., to United States of America, Army. Temperature and velocity apparatus for moving fluids. 3,706,228, Cl. 73-343.00r.

Butler, Lee D.: *See—*
Grey, Donald M.; Butler, Lee D.; Welker, Jerry W.; and Crane, Jack W., 3,706,389.

Butler Manufacturing Company: *See—*
Peat, Robert W., 3,706,442.
Rush, Donald J., 3,706,622.

Byler, Eichard E.: *See—*
Borneman, Karl J.; Byler, Eichard E.; Roberts, Paul G.; and Smalinskas, Stepas, 3,706,240.

Byrd, Wendell M., Jr.: *See—*
Anderson, James J.; Byrd, Wendell M., Jr.; and Camacho, Vasco G., 3,706,821.

Cairns, John Francis, to Imperial Chemical Industries Limited. Manufacture of bipyridylium salts by oxidation of the corresponding dihydrobipyridyl. 3,706,752, Cl. 260-296.00d.

Caldwell, James E.; and Sorrell, Ronald R. Method of refining esters of organophosphorus acids. 3,706,822, Cl. 260-990.000.

Caldwell, Larry V.; and Miller, Brian S., to United States of America, Army. Tunnel electron emitter cathode. 3,706,920, Cl. 317-234.00r.

Camacho, Vasco G.: *See—*
Anderson, James J.; Byrd, Wendell M., Jr.; and Camacho, Vasco G., 3,706,821.

Camilleri, Louis T.; and Forgione, Anthony F., to Hooker Chemical Corporation. Process for preparing discoloration-resistant curable polyurethane coatings. 3,706,710, Cl. 260-75.0ne.

Campbell, Alastair; and Carruthers, Rosemary Angela, to Imperial Chemical Industries Limited. Manufacture of 1,1,1-trichloroethane. 3,706,816, Cl. 260-658.00r.

Canadian Fina Oil Limited: *See—*
Redford, David Arthur, 3,706,341.

Canadian Industries Limited: *See—*
Jones, Elwyn David; and Rowley, Edward Kenneth, 3,706,625.

Canadian Kenworth Ltd.: *See—*
Burrows, Clifford G.; Magnuson, John E.; and Giese, Ludi, 3,706,464.

Canon Kabushiki Kaisha: *See—*
Nagashima, Shinichiro; and Tsuchiya, Kaichi, 3,706,551.

Caputo, William R., to Westinghouse Electric Corporation. Motor control system. 3,706,358, Cl. 187-29.

Carlier, Claude. Dispatch and reception station for pneumatic transmissions. 3,706,428, Cl. 243-19.000.

Carling Electric, Inc.: *See—*
Sorenson, Richard W., 3,706,869.

Carlson, Carl M. Valve. 3,706,322, Cl. 137-625.660.

Carre, Roland, to Thomson-CSF. Devices for eliminating fixed-echoes. 3,706,990, Cl. 343-7.700.

Carrell, Peter K., to CPC International Inc. Solid, glass-like starch hydrolysates having high densities. 3,706,598, Cl. 127-29.000.

Carruthers, Rosemary Angela: *See—*
Campbell, Alastair; and Carruthers, Rosemary Angela, 3,706,816.

Caterpillar Tractor Company: *See—*
Knell, Harvey A.; Olthoff, James A.; Scoggin, Barry A.; and Smith, Roger M., 3,706,143.

Caverly, Brian Leonard; and Rossell, John Barry, to Lever Brothers Company. Process for preparing edible fat compositions containing triglycerides derived from C_{16}, C_{18}, C_{20}, and C_{22} fatty acids. 3,706,576, Cl. 99-118.00r.

Cease, Richard G.: *See—*
Bickford, William J.; and Cease, Richard G., 3,706,946.

Celanese Corporation: *See—*
Davis, Gerald W.; and Stackman, Robert W., 3,706,712.
Larkin, Donald R., 3,706,785.
Martin, Preston Kuhn; and Kelly, Richard Howard, 3,706,672.
Prinz, Roy H., 3,706,793.
Trapasso, Louis E., 3,706,707.

Centre National d'Etudes Spaliales: *See—*
Petit, Gerard; and Bricard, Pierre, 3,706,986.

Cescato, Richard W., to CPC International Inc. Compositions useful in the production of paper products and based upon novel starch derivatives. 3,706,584, Cl. 106-214.000.

Chamberlin, Coleman R. File folder paper fastener. 3,706,501, Cl. 402-15.000.

Chambers, Charles W., Jr., to Lorain Products Corporation. Amplifier circuit for transmission lines. 3,706,862, Cl. 179-170.00t.

Chandrasekaran, Swayambu; and Mueller, Max B., to Allied Chemical Corporation. 3,3,3-Trifluoro-2-trifluoromethyl propene and vinylidene fluoride. 3,706,723, Cl. 260-87.700.

Chanod, Edward E.: *See—*
Hagan, James J.; Chanod, Edward E.; Feldman, Robert S.; and Cords, Helmuth, 3,706,660.

Chaplin, Merle P. Apparatus for removing marine growths and roots. 3,706,185, Cl. 56-9.000.

Chappelow, Ronald E.; Elijah, Leo E.; Elliott, Virgil L.; Grochowski, Edward G.; Harrison, Harry D.; Tice, Homer A.; and York, Ralph S., to International Business Machines Corporation. Computer control for real time determination of resistivity of epitaxialy growing crystals. 3,707,003, Cl. 444-1.000.

Chemagro Corporation: *See—*
Gier, Delta W.; and Wasleski, Daniel M., 3,706,786.

Chew, Frank D. Smoke abatement apparatus. 3,706,538, Cl. 23-284.000.

Chicago Bridge & Iron Company: *See—*
Arne, Christian, 3,706,627.

Chikanon, Mitsuo: *See—*
Matsuura, Takashi; and Chikanon, Mitsuo, 3,706,688.

Choi, Charles; and McGhay, Maynard H., to Motorola, Inc. Comb-line filter structure having reduced length and width. 3,706,948, Cl. 333-73.00c.

Chrisp, Joseph D., to Du Pont de Nemours, E. I., and Company. Chemical foaming of water-bearing explosives. 3,706,607, Cl. 149-2.000.

Christmas, Mr., Incorporated: *See—*
Tedeschi, Armand E., Jr., 3,706,435.

Chrysler France: *See—*
Faure, Denis Marie, 3,706,362.

Ciba-Geigy A.G.: *See—*
Buehler, Arthur; and Steinlin, Felix, 3,706,698.
Dobinson, Bryan; and Winterbottom, Kenneth, 3,706,527.
Dobinson, Bryan; Hope, Paul; and Winterbottom, Kenneth, 3,706,528.

Dunnenberger, Max; and Biland, Hans Rudolf, 3,706,798.
Flensberg, Hermann; and Frey, Felix, 3,706,524.
Ciba-Geigy Corporation: *See—*
Bosshardt, Rolf; Fechtig, Bruno; Mueller, Johannes; Peter, Heinrich; and Bickel, Hans, 3,706,746.
Dexter, Martin; and Knell, Martin, 3,706,740.
Jeger, Oskar; and Wehrli, Hans Ueli, 3,706,736.
Kirchmayr, Audolph; Peterli, Hans Jakob; and Heller, Hansjarg, 3,706,700.
Petersen, John Valdemar Brammer; and Clauson-Kaas, Niels, 3,706,753.
Petersen, John Valdemar Brammer; and Clauson-Kaas, Niels, 3,706,754.
Rodriguez, Herman Robert; and deStevens, George, 3,706,830.
Rosen, Melvin Harris; and Blatter, Herbert Morton, 3,706,769.
Sallmann, Alfred; and Pfister, Rudolf, 3,706,735.
Schellenbaum, Max; and Duennenberger, Max, 3,706,834.
Schmidt, Paul; Eichenberger, Kurt; and Schweizer, Ernst, 3,706,738.
Wehrli, Hansuli; and Jeger, Oskar, 3,706,737.
Werner, Lincoln Harvey, 3,706,756.
Wilhelm, Max, 3,706,765.
Cincinnati, Incorporated: *See—*
Erhart, John J., 3,706,248.
Cities Service Company: *See—*
Eckert, Frank J.; and Meldrum, David R., 3,706,585.
Meldrum, David R.; and Eckert, Frank J., 3,706,586.
Cities Service Oil Company: *See—*
Herbert, Hugh P.; and Pelofsky, Arnold H., 3,706,648.
Clark, Frank Emmons, to Babcock & Wilcox Company, The. Insert dispenser. 3,706,247, Cl. 83-24.000.
Clark, Frank S. Polyphenyl ether lubricating compositions. 3,706,668, Cl. 252-49.900.
Clark, James F. Lightweight readily portable underwater habitation and method of assembly and emplacement. 3,706,206, Cl. 61-69.00r.
Clark, Sidney G.; and Feterstein, Harold E. Enzyme products. 3,706,674, Cl. 252-527.000.
Clauson-Kaas, Niels: *See—*
Petersen, John Valdemar Brammer; and Clauson-Kaas, Niels, 3,706,753.
Petersen, John Valdemar Brammer; and Clauson-Kaas, Niels, 3,706,754.
Clemens, Lawrence M.: *See—*
McKillip, William J.; and Clemens, Lawrence M., 3,706,797.
Clements, John Anthony; Goss, Alan Patrick; and Shepherd, Brian, to Smiths Industries Limited. Staircase counter. 3,706,890, Cl. 307-225.000.
Cler, Victor: *See—*
Comte, Bernard; and Cler, Victor, 3,706,839.
Clifford, George F., Jr.; and Woodward, Robert C., to Clifford Instruments, Inc. Densitometer having an analog computer for calculating a fraction of the total area under a curve. 3,706,877, Cl. 235-151.350.
Clifford Instruments, Inc.: *See—*
Clifford, George F., Jr.; and Woodward, Robert C., 3,706,877.
Coal Industry (Patents) Limited: *See—*
Hoult, Raymond Oliver, 3,706,416.
Coffre, Philippe: *See—*
Darmon, Jacques; and Coffre, Philippe, 3,706,985.
Cohen, Jerry J.; and Lewis, Arthur E., to United States of America, Atomic Energy Commission. Nuclear chimney radioactive waste disposal. 3,706,630, Cl. 176-87.000.
Cohn, Charles E., to United States of America, Atomic Energy Commission. Random number generator. 3,706,941, Cl. 331-78.000.
Colgate-Palmolive Company: *See—*
Gray, Frederick William, 3,706,670.
Collet, Etienne. Calendering roll. 3,706,119, Cl. 29-113.00r.
Collins Radio Company: *See—*
Sielaff, Ernst A., 3,706,136.
Collman, Joel, to Thiokol Chemical Corporation. Apparatus for packing a nonfluent composition. 3,706,257, Cl. 86-20.00r.
Combustion Engineering Inc.: *See—*
Penfield, Scott R., Jr., 3,706,301.
Commercial Solvents Corporation: *See—*
Stephan, J. T.; and Golick, A. J., 3,706,950.
Compagnie d'Etudes et de Recherches des Services Operationnels d'Assainissement en France Compagnie SAAF: *See—*
Le Quinquis, Jean Pierre, 3,706,380.
Compagnie Industrielle des Telecommunication Cit-Alcatel: *See—*
Tocquec, Yves; and Rabadeux, Andre, 3,706,999.
Computer Terminal Corporation: *See—*
Alexander, Jack F., 3,706,905.
Comte, Bernard; and Cler, Victor, to Gram S.A. Transformer station carried by a mast. 3,706,839, Cl. 174-45.0td.
Conco Inc.: *See—*
Siegal, Burton L., 3,706,110.
Condon, James A.; and Rothhaar, Charles W., to Maxon Pre-Mix Burner Corporation. Valve operating mechanism. 3,706,438, Cl. 251-251.000.
Conix, Andre Jan; and Jeurissen, Lambert Gaston, to Gevaert-Agfa N.V. Manufacture of moulding material starting from polyethylene terephthalate. 3,706,699, Cl. 260-40.00r.
Conix, Andre Jan; and Jeurissen, Lambert Gaston, to Gevaert-Agfa N.V. Process for the manufacture of highly polymeric polyesters utilizing samarium compound catalysts. 3,706,711, Cl. 260-75.00c.
Conrad Precision Industries, Inc.: *See—*
Thuler, Oscar, 3,706,543.
Conserva, Mario: *See—*
Di Russo, Ettore; and Conserva, Mario, 3,706,606.
Continental Can Company, Inc.: *See—*
Merz, Edmund H., 3,706,394.
Conway, Joseph Rae: *See—*
Wu, Joseph; and Conway, Joseph Rae, 3,706,137.
Coogan, Joseph F., III: *See—*
Mahlmann, James P.; Coogan, Joseph F., III; and Mazzaferro, Gene Alfred, 3,706,574.
Cookson, Robert Wilbur, to Sylvania Electric Products, Inc. Electric lamp with resilient base. 3,706,902, Cl. 313-318.000.
Copystatics Manufacturing Corporation: *See—*
Aasen, T. F.; Hartman, Thomas E.; and Schaffel, Martin, 3,706,490.
Coran, Aubert Y.; and Vineyard, Billy D., to Monsanto Company. Monosubstituted ureas in lubricating compositions. 3,706,667, Cl. 252-51.50a.
Cords, Helmuth: *See—*
Hagan, James J.; Chanod, Edward E.; Feldman, Robert S.; and Cords, Helmuth, 3,706,660.
Corey, Leonard S.: *See—*
Borel, Robert J.; Corey, Leonard S.; Rucharski, Thaddeus W.; Stocking, John L.; and Thomas, Frederick H., 3,706,406.
Cornelius, Werner; and Kaminski, Friedrich, to Cornelius, Werner, KG. Apparatus for burying a plastic drainage pipe line in the ground. 3,706,207, Cl. 61-72.600.
Cornelius, Werner, KG: *See—*
Cornelius, Werner; and Kaminski, Friedrich, 3,706,207.
Cornford, Neri E.: *See—*
Strapp, Joseph P.; and Cornford, Neri E., 3,706,962.
Corsepius, Horst: *See—*
Hardung-Hardung, Heimo; Corsepius, Horst; and Hofmann, Hansdieter, 3,706,647.
Cosgrove, Richard E.; Krull, Irwin H.; and Mask, Charles A., to Beckman Instruments, Inc. Electrochemical electrode. 3,706,649, Cl. 204-195.00m.
Cotton Incorporated: *See—*
Swidler, Ronald; and Wilson, Katherine W., 3,706,526.
Couret, Robert F.: *See—*
Lapeyre, James M.; and Couret, Robert F., 3,706,113.
Covert, Frederick M. Frame mounted camper hold-down. 3,706,469, Cl. 296-23.0mc.
Coville, William W., to Pitney-Bowes, Inc. Oscillatable ink pod and point member. 3,706,274, Cl. 101-333.000.
Cozza, Giorgio; Bottai, Gabriele; and Barilli, Filippo, to Societa Italiana Resine S.p.A. Process for the manufacture of sodium sulphate. 3,706,531, Cl. 23-121.000.
CPC International Inc.: *See—*
Carrell, Peter K., 3,706,598.
Cescato, Richard W., 3,706,584.
Gibbons, John P.; and Wondolowski, Lawrence, 3,706,726.
Craig, Jimmie M.: *See—*
Willard, Robert C.; Craig, Jimmie M.; and Jackson, Lloyd J., 3,706,277.
Crane, Jack W.: *See—*
Grey, Donald M.; Butler, Lee D.; Welker, Jerry W.; and Crane, Jack W., 3,706,389.
Crawford, Alexander, to Massey-Ferguson Services, N.V. Feed mechanism for hay balers. 3,706,273, Cl. 100-189.000.
Creusot-Loire: *See—*
Pere, Gerard, 3,706,237.
Crockett, Richard H., to Toscotech Corporation. Pressure seal assembly. 3,706,482, Cl. 308-1.000.
Cross, Ralph Herbert, III, to Hoult, David Parks, Gross, Ralph H., III and Milgram, Jerome H. Oil removal device. 3,706,382, Cl. 210-242.000.
Cullen, James A. Book jacketing device. 3,706,107, Cl. 11-1.000.
Curtin, Dennis Edward; and Hansen, John Edward, to Du Pont de Nemours, E. I., and Company. Brush bristles. 3,706,111, Cl. 15-159.00a.
Curtis, George L.; Riesenberg, James H.; and Kelly, Ralph E., to Pelorix Corporation. Plastic container and method of making the same. 3,706,393, Cl. 220-67.000.
Curtiss-Wright Corporation: *See—*
Moskowitz, Seymour; and Lingwood, William (said Moskowitz assor. to), 3,706,508.
Cuscurida, Michael: *See—*
Lloyd, Rodney Frederick; and Cuscurida, Michael, 3,706,714.
Cushman, Robert Holbrook, to Western Electric Company. Fusion bonding. 3,706,126, Cl. 29-498.000.
Cutler-Hammer, Inc.: *See—*
Halbeck, Werner B.; Quaal, John A.; Robbins, Clyde F.; Rutchik, Walter L.; and Ryczek, Lawrence J., 3,706,916.
Cynober, Simon: *See—*
Ricaud, Pierre; and Cynober, Simon, 3,706,286.
Dadura, James G.: *See—*
Day, Frederic F.; Emery, George E.; and Dadura, James G., 3,706,632.
Daiichi Seiyaku Co., Ltd.: *See—*

Nabeta, Saburo; Yamada, Yuzo; and Ito, Itsuya, 3,706,779.

Dailey, Jack R.; and Kuntzleman, Harry C., to International Business Machines Corporation. Functional memory storage cell. 3,706,977, Cl. 340-173.00r.

Dailey, Jack R.; Kuntzleman, Harry C.; and Surgent John G., to International Business Machines Corporation. Functional storage array. 3,706,978, Cl. 340-173.00r.

Daimler-Benz Aktiengesellschaft: *See*—
Helmer, Josef, 3,706,364.

D'Angelo, Antonio Joseph: *See*—
Mageli, Orville Leonard; and D'Angelo, Antonio Joseph, 3,706,818.

Dappen, Glen Marshall: *See*—
Hollister, Kenneth Robert; Perry, Ernest John; and Dappen, Glen Marshall, 3,706,564.

Darmon, Jacques; and Coffre, Philippe, to Jeument-Schneider. Binary to one out of N converter. 3,706,985, Cl. 340-347.00d.

Dashley, Eugene; Tassie, Douglas P.; and Seemann, James M., to General Electric Company. Multibarrel automatic weapon. 3,706,259, Cl. 89-12.000.

Davis, Anthony Charles; and Amos, Brian Franklyn, to Imperial Chemical Industries Limited. Synthetic yarns. 3,706,195, Cl. 57-140.0by.

Davis, G. W., Corporation: *See*—
Taub, Jack D., 3,706,190.

Davis, Gerald W.; and Stackman, Robert W., to Celanese Corporation and Fiber Industries, Inc. Aromatic sulfonate modified polyesters. 3,706,712, Cl. 260-75.00s.

Davis, Grosse Ile Pauls: *See*—
Vogt, Herwart C.; and Davis, Grosse Ile Pauls, 3,706,683.

Davis, John A., Jr., to Marathon Oil Company. Brine salt concentration regulation using micellar dispersions. 3,706,659, Cl. 210-21.000.

Dawson, Hylton: *See*—
Ffowces-Williams, John Eirwyn; Hawkins, Roy; Dawson, Hylton; and Smith, William, 3,706,353.

Day, Frederic F.; Emery, George E.; and Dadura, James G., to Texaco Inc. Manufacture of lube oil containing overbased sulfurized calcium alkyphenolate. 3,706,632, Cl. 252-42.700.

De Angelis, Gerald George; and Hess, Hans-Jurgen Ernst, to Pfizer Inc. Benzothieno [3,2-d]- and benzofuro [3,2-d] pyrimidines. 3,706,747, Cl. 260-256.50r.

De Gasperis, Lino E.: *See*—
Bunte, William S.; and De Gasperis, Lino E., 3,706,518.

De Gaudemaris, Gabriel: *See*—
Salle, Robert; Sillion, Bernard; and De Gaudemaris, Gabriel, 3,706,803.

de Montebello, Roger L. Reinforced lenticular sheet with plural apertured sheets. 3,706,486, Cl. 350-167.000.

De Neve, Gerard Marie Jules, to U.S. Philips Corporation. Discharge lamp provided with a substantially straight oblong discharge tube. 3,706,901, Cl. 313-285.000.

De Rosset, Armand J.; and Neuzil, Richard W., to Universal Oil Products Company. Fluid-solid contacting apparatus. 3,706,812, Cl. 260-674.0sa.

De Vost, Valmore F.; and Simkins, John W., to United States of America, Navy. Pressure gage for recording peak pressures. 3,706,229, Cl. 73-396.000.

Decca Limited: *See*—
Hughes, David Geoffrey, 3,706,995.

Deeg, Karl: *See*—
Engelsmann, Dieter; Hackenberg, Hubert; and Deeg, Karl, 3,706,268.

Deere & Company: *See*—
Patterson, Roger Lee; and Isachsen, Henning, 3,706,345.

Deering Milliken Research Corporation: *See*—
Klein, Norman E., 3,706,623.

Deffner, John F., to Gulf Research & Development Company. Insecticidal compositions containing 2,6,7-trioxa-1-arsabicyclo 2.2.2 octane compounds. 3,706,836, Cl. 424-297.000.

Deguchi, Masahiro; and Hashirano, Masaru, to Matsushita Electric Industrial Co., Ltd. Automatic tape loading type magnetic recording and reproducing apparatus. 3,706,425, Cl. 242-195.000.

Dehlin, Leone S.; and Howard, Vesper J. Artificial breast replacement. 3,706,104, Cl. 3-36.000.

Deibert, Harold Leroy. Umbrella and umbrella tree frost cover. 3,706,160, Cl. 47-21.000.

Demler, Henry William, Sr.: *See*—
Hoffman, Joseph Willard; and Demler, Henry William, Sr., 3,706,219.

Dessau, Ralph M.: *See*—
Stournas, Stamoulis; Heiba, El-Ahmadi I.; and Dessau, Ralph M., 3,706,541.

deStevens, George: *See*—
Rodriguez, Herman Robert; and deStevens, George, 3,706,830.

Devol, Paris E. Wheelbarrow assembly. 3,706,461, Cl. 280-47.260.

Deweyert, Harvey Rudolph: *See*—
Gray, Kenneth Russell; Van Blaricom, Lloyd Eugene; Herrick, Franklin Willard; and Deweyert, Harvey Rudolph, 3,706,545.

Dexter, Martin; and Knell, Martin, to Ciba-Geigy Corporation. 3,5-dialkyl-4-hydroxyphenyl derivatives of triazines. 3,706,740, Cl. 260-248.0cs.

Di Russo, Ettore; and Conserva, Mario, to Societa per l'Esercizio dell'Istituto Sperimentale dei Metalli Leggeri, S.p.A. Thermomechanical treatment process for heat treatable aluminium alloys. 3,706,606, Cl. 148-12.700.

Diamond Power Specialty Corporation: *See*—
Rosen, Philip J., 3,706,921.

Dibble, Leland, Jr.: *See*—
Gonzales, Michael; Benton, Richard H.; and Moore, William G., 3,706,457.

Dibley, John Edwin: *See*—
Salter, Frank Michael; and Dibley, John Edwin, 3,706,448.

Dickens, Harry R. Speed indicator for boats. 3,706,223, Cl. 73-184.000.

Dickson, Robert L.; Johnson, George B.; and Hansen, Kirby W., Jr., to United States of America, Navy. Performance monitor unit for frequency multiplexed HF modems. 3,706,854, Cl. 179-15.0bt.

Dietmann, Karl: *See*—
Fauland, Erich; Kampe, Wolfgang; Thiel, Max; Juhran, Wolfgang; Dietmann, Karl; and Stork, Harald, 3,706,728.

Dietrich, Werner; and Stammheim, Andres, to Bayer Aktiengesellschaft. Hydrophilic polyurethane foams prepared from biuret containing polyisocyanates. 3,706,678, Cl. 260-2.5ad.

Dimeler, Glenn R.: *See*—
Mills, Ivor W.; Dimeler, Glenn R.; and Kirk, Merritt C., Jr., 3,706,653.

Dixon, Jack R. Target type scoring device. 3,706,451, Cl. 273-26.00a.

Dobinson, Bryan; and Winterbottom, Kenneth, to Ciba-Geigy AG. Treatment of keratinous fibres and fabrics with polythiols. 3,706,527, Cl. 8-127.500.

Dobinson, Bryan; Hope, Paul; and Winterbottom, Kenneth, to Ciba-Geigy AG. Modifying keratinous textiles and fibres with mercaptan polyesters. 3,706,528, Cl. 8-128.00a.

Dodson, Joseph J., Jr.: *See*—
Wald, Ernst A.; and Dodson, Joseph J., Jr., 3,706,205.

Doi, Yoshikazu; Kishikawa, Toshiro; and Sunaga, Yasumasa, to Fuji Shashin Koki Kabushiki Kaisha. Optical system for mechanically scanning with a rotating polyhedral reflector. 3,706,484, Cl. 350-7.000.

Domenico, Penelope B., to Dow Chemical Company, The. Certain polyhalo-4-nitor-picolinonitriles. 3,706,751, Cl. 260-294.900.

Donofrio, Nicholas M.; and Linton, Richard H., to International Business Machines Corporation. A.C. stable storage cell. 3,706,891, Cl. 307-238.000.

Doolittle, Frederick W.: *See*—
Bonafino, Edward J.; Doolittle, Frederick W.; Hayes, Charles U.; and Yarrington, James C., 3,706,370.

Dorak, Marvin H., to Kaufman Mfg., Co. Metal cutting machines. 3,706,506, Cl. 408-130.000.

Dostal, Pravomil, to Elitex Zavody Textilniho Strojirenstvi generalni reditelstvi. Device for the continuous and automatically controlled driving of warp beams and similar devices bearing a yarn supply. 3,706,328, Cl. 139-110.000.

Dotson, William P., Jr. Method of measuring (the velocity of a small moving objects. 3,706,495, Cl. 356-28.000.

Douds, Robert G.: *See*—
Erikson, J. A.; and Douds, Robert G., 3,706,709.

Dow Badische Company: *See*—
Tzentia, Leonidas S., 3,706,828.

Dow Chemical Company, The: *See*—
Blanchard, Robert R.; Kennedy, James S.; and Roberts, Reginald F., 3,706,724.
Booth, Llewellyn Delphin, 3,706,680.
Domenico, Penelope B., 3,706,751.
Moore, Edgar E.; and Foster, William A., 3,706,629.
Nelson, Alfred R.; and Floria, Vernon D., 3,706,722.
Wessling, Ritchie A.; and Zimmerman, Ray G., 3,706,677.

Dow Corning Corporation: *See*—
Bachura, Richard A., 3,706,681.
Huebner, David J.; and Meddauh, Michael D., 3,706,695.

Dow-Unquinesa S.A.: *See*—
Solomka, Monroe M.; and Aguirre, Enrique Renteria, 3,706,829.

Drazick, Herman J. Latch assembly for mold bases. 3,706,116, Cl. 24-130.0av.

Drelich, Arthur H.; and Bowman, Bobby R., to Johnson and Johnson Corporation. Method of applying a resin binder to a substrate. 3,706,595, Cl. 117-38.000.

Dren, Anthony Thomas: *See*—
Plotnikoff, Nicholas Peter; Dren, Anthony Thomas; and Jochimsen, William George, 3,706,831.

Dresser Industries, Inc.: *See*—
Paulssen, Walter A.; and Johnston, Robert R., 3,706,361.
Youmans, Arthur H., 3,706,884.

Drexelbrook Controls, Inc.: *See*—
Maltby, Frederick L., 3,706,980.

Dreyfus, L. A., Company: *See*—
Phillips, Michael; and Jurow, Victor A., 3,706,419.

Du Pont de Nemours, E. I., and Company: *See*—
Blackwell, John; Gumprecht, William Henry; and Starn, Roy Emerson, Jr., 3,706,525.
Brannan, James R., 3,706,640.
Brannan, James R., 3,706,642.
Bride, John Edwin, 3,706,636.
Bride, John Edwin, 3,706,637.
Bride, John Edwin, 3,706,638.
Bride, John Edwin; and Huba, Francis, 3,706,639.
Chrisp, Joseph D., 3,706,607.
Curtin, Dennis Edward; and Hansen, John Edward, 3,706,111.
Goffinet, Edward P., Jr., 3,706,719.
Hall, Nelson Lee; and Slocum, Donald Hillman, 3,706,825.

Huba, Francis; and Bride, John Edwin, 3,706,641.
Huba, Francis, 3,706,643.
Lee, Kyu Tai, 3,706,780.

Dudley, Wray E.: *See—*
Fox, Gerald B.; Dudley, Wray E.; and Athey, Stuart E., 3,706,317.

Duennenberger, Max: *See—*
Schellenbaum, Max; and Duennenberger, Max, 3,706,834.

Dufault, Emmanuel J., to Sybron Corporation. Blood separation process. 3,706,571, Cl. 99-21.000.

Duffy, James V.; and Erickson, Porter W., to United States of America, Navy. Depotting solvent. 3,706,691, Cl. 252-364.000.

Duke, Roy B., Jr., to Marathon Oil Company. Oxidative dealkylation and dehydrogenation of tert-alkyl aromatics. 3,706,811, Cl. 260-669.00r.

Dunbar, Charles C. Tide-actuated machine. 3,706,507, Cl. 415-7.000.

Duncan, Vernon R.; and Owen, Louis L., to General Electric Company. Modulating circuit. 3,706,943, Cl. 332-9.00t.

Duncan, William E., to United States of America, Navy. Orthogonal line generator. 3,706,235, Cl. 74-52.000.

Dunfield, John C. G., to Sperry Rand Corporation. Brushless D.C. motor acceleration system. 3,706,923, Cl. 318-254.000.

Dunlop Tire and Rubber Corporation: *See—*
Hoke, Gilbert J., 3,706,334.

Dunnenberger, Max; and Biland, Hans Rudolf, to Ciba-Geigy AG. Bisoxalic acid diamides. 3,706,798, Cl. 260-559.00a.

Dupre, Herman K. Apparatus and method for making snow. 3,706,414, Cl. 239-14.000.

Duve, John P.; and Petry, Stanton H., to Sunbeam Corporation. Lather making apparatus. 3,706,690, Cl. 252-359.00e.

Dykstra, Edward G., to Ethylox Products, Inc. Method and apparatus for forming the end of a plastic tube and sealing the tube within a flexible container. 3,706,620, Cl. 156-221.000.

Dynamic Tools Ltd.: *See—*
Van Schaik, Gerard, 3,706,245.

Dynamit Nobel AG: *See—*
Seiler, Claus-Dietrich; and Vahlensieck, Hans-Joachim, 3,706,777.

Dynamit Nobel Aktiengesellschaft: *See—*
Seiler, Claus-Dietrich; Vahlensieck, Hans-Joachim; and Boje, Kurt, 3,706,776.

Dynatech Corporation: *See—*
Oberhauser, Charles J., 3,706,443.

Eastman Kodak Company: *See—*
Bartles, Edward C.; and Fraim, Raymond A., 3,706,339.
Borel, Robert J.; Corey, Leonard S.; Rucharski, Thaddeus W.; Stocking, John L.; and Thomas, Frederick H., 3,706,406.
Ericson, Ronald Harris, 3,706,565.
Fox, Charles J.; and Light, William A., 3,706,554.
Gilman, Paul B., Jr.; and Bass, Jon D., 3,706,569.
Haefner, John A., 3,706,568.
Harvey, Donald M., 3,706,267.
Heseltine, Donald W.; and Eldredge, Carl H., 3,706,555.
Hiller, Gary L., 3,706,567.
Hollister, Kenneth Robert; Perry, Ernest John; and Dappen, Glen Marshall, 3,706,564.
Mowrey, Rowland G.; Stephen, Keith H.; and Wolfarth, Eugene F., 3,706,561.
Simon, Horst; and Kirpol, Franz, 3,706,265.
Smith, Gerald C., 3,706,373.
Spani, Wayne, 3,706,878.
Spani, Wayne, 3,706,880.
Taylor, Clarence Reynold, 3,706,108.

Eberhardt, Toni, to Schneider, Jos., & Co. Optische Werke Kreuznach. Clamp for optical instruments and the like. 3,706,437, Cl. 248-230.000.

Eby, George W. Emergency signal light with magnetic contacts. 3,706,882, Cl. 240-7.10r.

Eckert, Frank J.: *See—*
Meldrum, David R.; and Eckert, Frank J., 3,706,586.

Eckert, Frank J.; and Meldrum, David R., to Cities Service Company. Method for producing pearlescent basic lead carbonate. 3,706,585, Cl. 106-291.000.

Eden, Jamal S., to Goodrich, B. F., Company, The. Catalyst for preparation of unsaturated aldehydes and acids. 3,706,692, Cl. 252-432.000.

Edenhofer, Albrecht; Ramuz, Henri; and Spiegelberg, Hans, to Hoffmann-La Roche Inc. Certain 4[3-[4-(phenyl)-3,6-dihydro-1(2H) pyridyl]-2-hydroxy-propoxy]-benzophenones. 3,706,755, Cl. 260-297.00r.

Edwards, John A.; and Fried, John H., to Syntex Corporation. Substituted cyclohexene carboxylic acids and derivatives thereof. 3,706,784, Cl. 260-473.00r.

Egan Machinery Company: *See—*
Bunte, William S.; and De Gasperis, Lino E., 3,706,518.

Egervary, Tibor I.: *See—*
Helgeson, Peter L.; and Egervary, Tibor I., 3,706,302.

Eichenberger, Kurt: *See—*
Schmidt, Paul; Eichenberger, Kurt; and Schweizer, Ernst, 3,706,738.

Eilers, Kenneth L.; and Kopacki, Adams F., to Stauffer Chemical Company. Processing aid for post-chlorinated polyvinyl chloride. 3,706,686, Cl. 260-23.0xa.

Einstman, William J.; Ponzoni, George B.; and Leonard, Richard J., to General Foods Corporation. Process for aggregating prelightened coffee compositions. 3,706,572, Cl. 99-71.000.

Eisenstein, Stephen E.: *See—*
Bachman, Gustave Bryant; and Eisenstein, Stephen E., 3,706,808.

Eisenwerk-Gesellschaft Maximilianshutte mbH: *See—*
Knuppel, Helmut; Brotzmann, Karl; Fassbinder, Hans-Georg; Savard, Guy; and Lee, Robert, 3,706,549.

Eisenwerke Kaiserslautern GmbH: *See—*
Gehlen, Hermann Walter; Hartmann, Karl; and Thieme, Gerhard, 3,706,209.

Eisner, Steve, to Norton Company. Contour actuvating device. 3,706,650, Cl. 204-217.000.

Eldredge, Carl H.: *See—*
Heseltine, Donald W.; and Eldredge, Carl H., 3,706,555.

Eldridge, David G.: *See—*
Hayner, Paul F.; and Eldridge, David G., 3,706,323.

Electrolocation Limited: *See—*
Howell, Mark I., 3,707,002.

Electrospin Corporation, mesne: *See—*
Amato, Richard A., 3,706,193.

Elijah, Leo E.: *See—*
Chappelow, Ronald E.; Elijah, Leo E.; Elliott, Virgil L.; Grochowski, Edward G.; Harrison, Harry D.; Tice, Homer A.; and York, Ralph S., 3,707,003.

Elitex Zavody Textilniho Strojirenstvi generalni reditelstvi: *See—*
Dostal, Pravomil, 3,706,328.

Elliott, Virgil L.: *See—*
Chappelow, Ronald E.; Elijah, Leo E.; Elliott, Virgil L.; Grochowski, Edward G.; Harrison, Harry D.; Tice, Homer A.; and York, Ralph S., 3,707,003.

Elmer, William B. Patterned diffuse reflecting. 3,706,218, Cl. 72-379.000.

Eltro GmbH & Co.: *See—*
Siebecker, Hans; Wichmann, Gunter; and Kurotschka, Georg, 3,706,886.

Emery, George E.: *See—*
Day, Frederic F.; Emery, George E.; and Dadura, James G., 3,706,632.

Emshwiller, MacLellan, to Bell Telephone Laboratories, Incorporated. Optical wave correlation. 3,706,881, Cl. 235-181.000.

Engelhardt, Bjorn H., to Raytheon Company. Power regulating amplifier system. 3,706,925, Cl. 323-22.00t.

Engelsmann, Dieter; Hackenberg, Hubert; and Deeg, Karl, to Agfa-Gevaert Aktiengesellschaft. Photographic apparatus. 3,706,268, Cl. 95-53.00r.

Enloe, Howard M.: *See—*
Huber, Buel D.; and Enloe, Howard M., 3,706,824.

Epifani, Corrado; and Pucci, Luigi. Joint device for a disconnectable mechanical and electric connection of an electric light pendant or other suspended electric apparatus, to a carrying means. 3,706,956, Cl. 339-66.00m.

Eraser Company, Inc., The: *See—*
Wright, James R.; and Be Vard, Ralph E., 3,706,242.

Erhart, John J., to Cincinnati, Incorporated. Numerical control apparatus for a shear. 3,706,248, Cl. 83-74.000.

Erich, Reuben R., 1/2 to Erich, Richard R. Oil well pump actuating mechanism. 3,706,234, Cl. 74-41.000.

Erich, Richard R.: *See—*
Erich, Reuben R., 3,706,234.

Erickson, Porter W.: *See—*
Duffy, James V.; and Erickson, Porter W., 3,706,691.

Ericson, Ronald Harris, to Eastman Kodak Company. Photographic compositions containing an admixture of organic and inorganic silver salts. 3,706,565, Cl. 96-114.000.

Erikson, J. A.; and Douds, Robert G., to PPG Industries. Coating compositions of unsaturated carboxylic acid amide polymers and unsaturated organosilanes. 3,706,709, Cl. 260-80.071.

Erlich, Giora. Skimmer assembly having an automatic shut-off weir. 3,706,379, Cl. 210-169.000.

ESB Incorporated: *See—*
Bergum, Bernard C.; and Youngquist, John A., 3,706,616.

Esclamadon, Christian; Labat, Yves; and Signouret, Jean-Baptiste, to Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine. Formal propyl or butyl dithiol. 3,706,806, Cl. 260-609.00r.

Esler, Richard Brotherton: *See—*
Smith, Sydney; Hunt, Jerry Donald; and Esler, Richard Brotherton, 3,706,222.

Estelle, Weems E.: *See—*
Rapoza, Edward J.; Siegel, Maxwell E.; Estelle, Weems E.; Petrucci, Pasquale M.; Linarducci, Joseph S.; Hamma, John; and Montgomery, John, 3,706,499.

Etat Francais: *See—*
Bouisse, Jean Marie Germain; Martel, Charles Etienne Georges; and Villey-Desmeserets, Franck Pierre Antoine, 3,706,283.

Etherington, Robert W., Jr.; and Kaeding, Warren W., to Mobil Oil Corporation. Preparation of alkyl-substituted phenols. 3,706,807, Cl. 260-624.00c.

Ethylox Products, Inc.: *See—*
Dykstra, Edward G., 3,706,620.

Evers, William John: *See—*
Katz, Ira; Evers, William John; and Giacino, Christopher, 3,706,577.

Exatest Messtechnik GmbH: *See—*
Wunsch, Bruno, 3,706,888.

Fairchild Industries, Inc.: *See—*
Baniadam, Mahmood; and Morando, Jorge A., 3,706,318.

Falk, John D. Sterilization of protein containing fluids. 3,706,631, Cl. 195-1.800.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Hirane, Seiichi; Aya, Masahiro; and Kishino, Shigeo, 3,706,832.
Leontaritis, Lambis; Schon, Nikolaus; and Hoffmann, Hans, 3,706,124.

Fassbinder, Hans-Georg: *See—*
Knuppel, Helmut; Brotzmann, Karl; Fassbinder, Hans-Georg; Savard, Guy; and Lee, Robert, 3,706,549.

Fauland, Erich; Kampe, Wolfgang; Thiel, Max; Juhran, Wolfgang; Dietmann, Karl; and Stork, Harald, to Boehringer Mannheim GmbH. N(6)-branched chain lower-alkyl-adenosine derivatives. 3,706,728, Cl. 260-211.50r.

Faure, Denis Marie, to Chrysler France. Telescopic hydraulic damper. 3,706,362, Cl. 188-282.000.

Fawcett, John Anthony; and Gray, William Hugh, to Rank Organisation Limited, The. Multi-layer anti-reflection coatings using intermediate layers having monotonically graded refractive index. 3,706,485, Cl. 350-164.000.

Fechtig, Bruno: *See—*
Bosshardt, Rolf; Fechtig, Bruno; Mueller, Johannes; Peter, Heinrich; and Bickel, Hans, 3,706,746.

Fedors, Robert F.: *See—*
United States of America, National Aeronautics and Space Administration, 3,706,221.

Feldman, Robert S.: *See—*
Hagan, James J.; Chanod, Edward E.; Feldman, Robert S.; and Cords, Helmuth, 3,706,660.

Ferguson, Colin Campbell; and Bolton, William Robert Fossey. Automatic brake-safety control. 3,706,352, Cl. 180-103.000.

Ferguson, Harry R., to United States of America, Army. Composite polysulfide propellant cured with a monofunctional mercaptan. 3,706,610, Cl. 149-19.000.

Ferro Manufacturing Corporation: *See—*
Pickles, Joseph, 3,706,163.
Pickles, Joseph, 3,706,236.

Feterstein, Harold E.: *See—*
Clark, Sidney G.; and Feterstein, Harold E., 3,706,674.

Ffowces-Williams, John Eirwyn; Hawkins, Roy; Dawson, Hylton; and Smith, William, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Noise suppressor for jet engines. 3,706,33, Cl. 181-33.0hc.

Fiat Societa per Azioni: *See—*
Michellone, Giancarlo; and Palazzetti, Mario, 3,706,478.

Fiber Industries, Inc.: *See—*
Davis, Gerald W.; and Stackman, Robert W., 3,706,712.

Fibreboard Corporation: *See—*
Baker, David R., 3,706,410.

Firestone Tire & Rubber Company, The: *See—*
Smith, Sydney; Hunt, Jerry Donald; and Esler, Richard Brotherton, 3,706,222.

Fisher, George Myles Cordell; Froehlich, Fritz Edgar; Levin, William; McDowell, Blake, III; and O'Boyle, Leonard Edward, to Bell Telephone Laboratories, Incorporated. Telewriting system. 3,706,850, Cl. 178-18.000.

Fister, Karoly G.; and Gibbons, Martin D., to General Electric Company. Photocathode-phosphor imaging system for X-ray camera tubes. 3,706,885, Cl. 250-83.30r.

Flensberg, Hermann; and Frey, Felix, to Ciba-Geigy AG. Process for the dyeing or printing of textile fibre mixtures using simultaneously cationic and anionic dyestuff. 3,706,524, Cl. 8-21.000a.

Floria, Vernon D.: *See—*
Nelson, Alfred R.; and Floria, Vernon D., 3,706,722.

Flowers, Joseph K.: *See—*
Lootens, William F.; and Flowers, Joseph K., 3,706,915.

FMC Corporation: *See—*
Rampy, Gordon A.; Parsons, Norman C.; and Ryder, Mabel H., 3,706,823.

Fogleman, Floyd F.: *See—*
Kline, Richard L.; and Fogleman, Floyd F., 3,706,430.

Foley, David, to Lucas, Joseph, (Industries) Limited. Rocker switch interlock with spring latch member. 3,706,866, Cl. 200-50.00c.

Foley, James P. Leaf binding. 3,706,503, Cl. 402-69.000.

Folson, Henry J.; Boxley, Denis V.; Kingsbury, James; Kraitzer, Shlomo; Soulakis, George; and Whittington, Jimmie L., to Mattel, Inc. Remotely controlled wheeled toy vehicle system. 3,706,153, Cl. 46-202.000.

Fonken, Gunther S.: *See—*
Herr, Milton E.; Murray, Herbert C.; and Fonken, Gunther S., 3,706,801.

Forbes, Dudley Norman. Jacking devices. 3,706,441, Cl. 254-98.000.

Ford Motor Company: *See—*
Borneman, Karl J.; Byler, Eichard E.; Roberts, Paul G.; and Smalinskas, Stepas, 3,706,240.

Foreman, Robert J., to Raytheon Company. Coaxial magnetron slot mode suppressor. 3,706,910, Cl. 315-39.510.

Forgione, Anthony F.: *See—*
Camilleri, Louis T.; and Forgione, Anthony F., 3,706,710.

Forney Engineering Company: *See—*
Paredes, Candelario, 3,706,969.

Foster, William A.: *See—*
Moore, Edgar E.; and Foster, William A., 3,706,629.

Fox, Charles J.; and Light, William A., to Eastman Kodak Company. Photoconductive composition. 3,706,554, Cl. 96-1.600.

Fox, Gerald B.; Dudley, Wray E.; and Athey, Stuart E., to Hobart Manufacturing Company. Module treating apparatus. 3,706,317, Cl. 134-57.0dl.

Fraim, Raymond A.: *See—*
Bartles, Edward C.; and Fraim, Raymond A., 3,706,339.

Franke, Norman W.; Paviak, Stanley C.; and Porter, Warren K., Jr., to Gulf Research & Development Company. Ethoxylated amino alkanes as surfactants. 3,706,676, Cl. 252-544.000

Freeman, Harlan G., to Weyerhaeuser Company. Method of bonding wood and other materials with rapid-curing adhesives using a primer composition. 3,706,619, Cl. 156-315.000.

Freimuth, John H.: *See—*
Hurlburt, Joseph C.; and Freimuth, John H., 3,706,186.

Frenzel, Manfred; and Stein, Karl Vom, to Goetzewerke Friedrich Goetz A.G. Oil seal for rotary piston machines. 3,706,459, Cl. 277-40.000.

Frey, Felix: *See—*
Flensberg, Hermann; and Frey, Felix, 3,706,524.

Frey, Harry Robert, to RCA Corporation. Photographic method for printing viewing screen structure including treatment of exposed coating before development. 3,706,558, Cl. 96-27.00e.

Fried, John H.: *See—*
Edwards, John A.; and Fried, John H., 3,706,784.
Marx, Michael; and Fried, John H., 3,706,781.

Fritz, William E.; and Koranda, Clarence J., to Youngstown Steel Door Company, The. Hopper outlet gate actuation mechanism and automatically actuated lock. 3,706,287, Cl. 105-292.00r.

Froehlich, Fritz Edgar: *See—*
Fisher, George Myles Cordell; Froehlich, Fritz Edgar; Levin, William; McDowell, Blake, III; and O'Boyle, Leonard Edward, 3,706,850.

Froehlich, Walter; and Lang, Walter, to Zeiss-Stiftung, Carl and Siemens Aktiengesellschaft. Means for evaluating and displaying certain image portions occuring within a total image. 3,706,851, Cl. 178-6.800.

Fryer, Rodney Ian; and Sternbach, Leo Henryk, to Hoffmann-La Roche Inc. 1,5-dihydro-2 H-1, 4-benzodiazepine. 3,706,734, Cl. 260-239.30d.

Fuji Photo Film Co., Ltd.: *See—*
Ishida, Hiroshi; and Mukai, Minoru, 3,706,369.
Kaneko, Keiji; Shoji, Kitimaru; and Mukai, Minoru, 3,706,180.
Miyano, Shizuo; Kido, Keishiro; Kondo, Asaji; and Mizuki, Eiichi, 3,706,593.
Nagae, Tadashi; Oishi, Yasushi; and Hayashi, Jun, 3,706,556.
Nakazawa, Yoshiyuki; Sueyoshi, Tohru; Sato, Akira; and Nakamura, Yashiharu, 3,706,570.
Shiba, Keisuke; Sueyoshi, Tohru; Akira, Sato; Kubodera, Seiiti; and Tsubota, Motohiko, 3,706,566.
Tanaka, Hiroshisa; Wada, Mitiaki; and Kaneko, Keiji, 3,706,179.

Fuji Shashin Koki Kabushiki Kaisha: *See—*
Doi, Yoshikazu; Kishikawa, Toshiro; and Sunaga, Yasumasa, 3,706,484.

Fujijura Kasei Company, Ltd.: *See—*
Fukuda, Tadanori; Takahashi, Masao; Ogihara, Shoji; and Sekiya, Masato, 3,706,589.

Fujisawa, Tamotsu; Ohtsuka, Noriko; Kobori, Takeo; and Tsuchihashi, Genichi, to Sagami Chemical Research Center. Process for the preparation of aryl sulfides. 3,706,805, Cl. 260-609.00e.

Fujitsu Limited: *See—*
Ikegami, Hideo, 3,706,912.

Fukuda, Tadanori; Takahashi, Masao; Ogihara, Shoji; and Sekiya, Masato, 33 1/3% to Toray Industries, Inc., 33 1/3% to Honda Motor Company, Ltd. and 33 1/3% to Fujijura Kasei Company, Ltd. Method for temporarily protecting the surfaces of an article. 3,706,89, Cl. 117-6.000.

Fukunaga, Masao; and Amo, Kiyoyuki, to Matsushita Electric Industrial Co., Ltd. Electrically powered can opener. 3,706,135, Cl. 30-4.00r.

Fukushima, Takekazu, to Kabushiki Kaisha Suwa Seikosha. Sealing structure in a waterproof watch. 3,706,198, Cl. 58-90.00r.

Furlenmeier, Andre: *See—*
Batcho, Andrew David; Berger, Julius; Furlenmeier, Andre; Keller, Oscar; Pecherer, Benjamin; Schocher, Arno Johannes; Spiegelberg, Hans; and Vaterlaus, Bruno Peter, 3,706,729.

Furlong, Owen Desmond, to Westland Aircraft Limited. Pressure control systems. 3,706,270, Cl. 98-1.500.

Furman, Rudolph S.; and Zimmer, Jerrold F., to International Business Machines Corporation. Fuser roll cleaning method and apparatus for performing it. 3,706,491, Cl. 355-133.000.

Furuichi, Itsuro: *See—*
Usamoto, Teruyoshi; Hatada, Yasutaka; Furuichi, Itsuro; and Matsuo, Masao, 3,706,819.

G. T. Products, Inc.: *See—*
Tolson, Raymond C. Sr.; and Tolson, Raymond C. Jr., 3,706,573.

Gabler, Rudolf: *See—*
Studinka, Josef; and Gabler, Rudolf, 3,706,702.

Gach, Peter P., to Sunbeam Plastics Corporation. Child-proof overcap for an aerosol can. 3,706,401, Cl. 222-153.000.

Gall, Rudi: *See—*
Berger, Herbert; Gall, Rudi; Merdes, Hartmut; Stach, Kurt; Sauer, Winfriede; and Vomel, Wolfgang, 3,706,745.

Gallin, Lawrence F.: *See—*

Brillaud, Andre R.; and Gallin, Lawrence F., 3,706,140.

Galves, Jean-Pierre; Monfroy, Henri; and Reboul, Jean-Philippe, to Thomson-CSF. Gas discharge display panel with mineral powder between apertured matrix and envelope seal. 3,706,899, Cl. 313-188.000.

Gamble, Ralph S., to Simmonds Precision Products, Inc. Depth sensing switch with tubular housing having a diaphragm encompassing a portion of said housing. 3,706,864, Cl. 200-83.00b.

Garbalizer Corporation of America: *See—*
Brewer, John C., 3,706,289.

Gardner, Peter, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Optical rate-of-displacement measuring apparatus. 3,706,494, Cl. 356-28.000.

Gardner, Tommy R., to Halliburton Company. Composition and method for the dissolution of gypsum. 3,706,669, Cl. 252-82.000.

Garnett, Robert E., to Richards Manufacturing Company. Hanging sling for arm cast. 3,706,310, Cl. 128-94.000.

Gates Rubber Company, The: *See—*
Stark, Robert E.; and Uba, Toshio, 3,706,617.

Gaylor, James E.: *See—*
Neese, John W.; and Gaylor, James E., 3,706,319.

Gaylord, Wilmer: *See—*
Gottron, Richard N.; and Gaylord, Wilmer, 3,706,227.

Gehlen, Hermann Walter; Hartmann, Karl; and Thieme, Gerhard, to Eisenwerke Kaiserslautern GmbH. Means for producing deep-frozen fillet blocks. 3,706,209, Cl. 62-341.

Gehman, John B., to General Dynamics Corporation. Intrusion detection system. 3,706,982, Cl. 340-258.00c.

Geier, George; and Mimmack, William E., to United States of America, Army, mesne. Cinetheodolite. 3,706,496, Cl. 356-149.000.

Geisler, Robert L., to United States of America, Air Force. Combustion tailoring of solid propellants by oxidizer encasement. 3,706,608, Cl. 149-6.000.

Gemini Investment Etablissement: *See—*
Axisa, Walter, 3,706,117.

Gendron, Lester. Mobile washing machine. 3,706,210, Cl. 68-152.000.

General Dynamics Corporation: *See—*
Gehman, John B., 3,706,982.

General Electric Company: *See—*
Alley, Robert P., 3,706,952.
Dashley, Eugene; Tassie, Douglas P.; and Seemann, James M., 3,706,259.
Duncan, Vernon R.; and Owen, Louis L., 3,706,943.
Fister, Karoly G.; and Gibbons, Martin D., 3,706,885.
Lederer, Edwin H., 3,706,409.
Lootens, William F.; and Flowers, Joseph K., 3,706,915.
Martyny, William C.; Miller, Victor W.; and Olwert, Ronald J., 3,706,895.
Mc Cann, Joseph A., 3,706,129.
Studinka, Josef; and Gabler, Rudolf, 3,706,702.

General Foods Corporation: *See—*
Einstman, William J.; Ponzoni, George B.; and Leonard, Richard J., 3,706,572.
Mahlmann, James P.; Coogan, Joseph F., III; and Mazzaferro, Gene Alfred, 3,706,574.

General Instrument Corporation: *See—*
Robertson, Alexander, 3,706,232.

General Kinematics Corporation: *See—*
Musschoot, Albert, 3,706,372.

Gentry, Charles B., to Granco Equipment, Inc. Fume incinerator. 3,706,445, Cl. 263-8.00r.

Gerstenberger, Roland W.; and Gunn, David P., to Jensen Machinery Inc. Folding apparatus. 3,706,450, Cl. 270-84.000.

Gevaert-Agfa N.V.: *See—*
Conix, Andre Jan; and Jeurissen, Lambert Gaston, 3,706,699.
Conix, Andre Jan; and Jeurissen, Lambert Gaston, 3,706,711.

Giacino, Christopher: *See—*
Katz, Ira; Evers, William John; and Giacino, Christopher, 3,706,577.

Gibbons, John P.; and Wondolowski, Lawrence, to CPC International Inc. Polyurethane resins prepared from alkoxylated glucose derivatives. 3,706,726, Cl. 260-210.00r.

Gibbons, Martin D.: *See—*
Fister, Karoly G.; and Gibbons, Martin D., 3,706,885.

Gibson, Fred D., Jr.; Rhees, Raymond C.; Gilson, James I.; and Halker, Bruce B. Method for removing solids build-up from cathodes of electrolytic cell. 3,706,646, Cl. 204-149.000.

Giel, Geroge James, to RCA Corporation. Apparatus for mounting and spacing a signal transducer with respect to a recording medium. 3,706,861, Cl. 179-100.20p.

Gier, Delta W.; and Wasleski, Daniel M., to Chemagro Corporation. Chloronitrophenyl esters of polycarboxylic acids. 3,706,786, Cl. 260-479.00s.

Giese, Ludi: *See—*
Burrows, Clifford G.; Magnuson, John E.; and Giese, Ludi, 3,706,464.

Gilks, James Harris, to Imperial Chemical Industries Limited. Fuel gas for cutting operations. 3,706,542, Cl. 48-197.0fm.

Gillespie, James Francis, to AMP Incorporated. Crimping dies for terminating foil conductor in a foil conductor termination and foil locator and holder therefor. 3,706,121, Cl. 29-203.00h.

Gillmer, Arnold H.; and Hance, Harold V., to Hughes Aircraft Company. Coherent-angle tracking system incorporating target-velocity tracking apparatus. 3,706,991, Cl. 343-7.700.

Gilman, Paul B., Jr.; and Bass, Jon D., to Eastman Kodak Company. Silver halide emulsion containing silver ethynylcyclopentanol complex to reduce desensitization of optical sensitizing dye incorporated therein. 3,706,569, Cl. 96-134.00r.

Gilson, James I.: *See—*
Gibson, Fred D., Jr.; Rhees, Raymond C.; Gilson, James I.; and Halker, Bruce B., 3,706,646.

Gitlitz, Melvin Hyman, to M & T Chemicals Inc. Stannous glycoloxides. 3,706,774, Cl. 260-429.700.

Glaser, Jules, to Unisto AG. Tag for nets. 3,706,147, Cl. 40-2.000.

Glass, Marvin, & Associates: *See—*
Meyer, Burton C., 3,706,455.

Glause, Gene N.: *See—*
Glause, Loy E.; and Glause, Gene N., 3,706,164.

Glause, Loy E.; and Glause, Gene N. Gate latch adaptable for use with multi-panels type farm gates. 3,706,164, Cl. 49-394.000.

Gleeson, Robert Leonard, to Lucas, Joseph, (Industries) Limited. Electrical switches. 3,706,133, Cl. 29-622.000.

Gluckin, Gerald W. Stretch fabric watchband. 3,706,404, Cl. 224-4.00e.

Godoy, Humbert C.; and Vogelsberg, R. Eric, to International Business Machines Corporation. Logical fault screening technique. 3,706,879, Cl. 235-153.0ac.

Goetzewerke Friedrich Goetz A.G.: *See—*
Frenzel, Manfred; and Stein, Karl Vom, 3,706,459.

Goffinet, Edward P., Jr., to Du Pont de Nemours, E. I., and Company. Process for the polymerization of monomers. 3,706,719, Cl. 260-80.780.

Goldberg, Perry; and Segalman, Irwin, to United Aircraft Corporation. Wall structure for a gas turbine engine. 3,706,203, Cl. 60-39.650.

Goldman, Leon: *See—*
Albright, Jay Donald; and Goldman, Leon, 3,706,760.

Goldsmith, Jerry G.: *See—*
Berger, Harold J.; and Goldsmith, Jerry G., 3,706,305.
Berger, Harold J.; and Goldsmith, Jerry G., 3,706,306.

Goldstein, Leon: *See—*
Katchalski, Ephraim; Goldstein, Leon; Levin, Yehuda; and Blumberg, Shmaryahu, 3,706,633.

Golick, A. J.: *See—*
Stephan, J. T.; and Golick, A. J., 3,706,950.

Gonzales, Michael; Benton, Richard H.; and Moore, William G., to Dibble, Leland, Jr. Game having captured marble exposed for digital manipulation. 3,706,457, Cl. 273-153.00s.

Goodrich, B. F., Company, The: *See—*
Eden, Jamal S., 3,706,692.
Kramer, James H., 3,706,481.
Rinker, William R., 3,706,624.

Goodyear Aerospace Corporation: *See—*
Sprick, Walter F.; Morse, Frank C.; Holzer, Alexander; Meller, Oscar W.; and Lovich, John W., 3,706,392.

Goodyear B. F., Company, The: *See—*
Backderf, Richard H., 3,706,697.

Goodyear Tire & Rubber Company, The: *See—*
Hopton, Thomas E.; and Socha, Robert P., 3,706,679.

Goodyear Tire and Rubber Company, The: *See—*
Wilson, Farris H., Jr., 3,706,742.

Gordt-Griess, Hanna: *See—*
Barth, Hans; Knausenberger, Martin; Lange, Henner; Menz, Hans-Udo; and Griess, Wilhelm, 3,706,675.

Gorog, Istvan: *See—*
Heyman, Philip Michael; and Gorog, Istvan, 3,706,845.

Goss, Alan Patrick: *See—*
Clements, John Anthony; Goss, Alan Patrick; and Shepherd, Brian, 3,706,890.

Gottron, Richard N.; and Gaylord, Wilmer, to United States of America, Army. Pneumatic thermometer. 3,706,227, Cl. 73-339.00a.

Gow, Kenneth P.: *See—*
Noar, Raymond; Tuffias, Robert H.; and Gow, Kenneth P., 3,706,231.

Grace, W. R., & Co.: *See—*
Hurst, John, 3,706,264.
Woodruff, Edward T.; and Andersen, Viggo S., 3,706,599.
Young, William E.; and Jezuit, Arthur D., 3,706,174.

Graf, Fritz; and Koenig, Horst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of furans by reaction of an oxazole with an acetylene compound. 3,706,770, Cl. 260-346.10r.

Grain, Clark F., to Itek Corporation. Image recording material containing titanium dioxide, and zinc oxide in minor amount and the use thereof. 3,706,560, Cl. 96-48.000.

Grakauskas, Vytautas, to Aerojet-General Corporation. N,N-difluorocarbamates. 3,706,788, Cl. 260-482.20c.

Gram S.A.: *See—*
Comte, Bernard; and Cler, Victor, 3,706,839.

Granco Equipment, Inc.: *See—*
Gentry, Charles B., 3,706,445.

Grandy, Andrew J. Method of making ammunition. 3,706,256, Cl. 86-1.000.

Gray, Frederick William, to Colgate-Palmolive Company. Bleaching composition. 3,706,670, Cl. 252-95.000.

Gray, Kenneth Russell; Van Blaricom, Lloyd Eugene; Herrick, Franklin Willard; and Deweyert, Harvey Rudolph, to International Telephone and Telegraph Corporation. Foliar sprays. 3,706,545, Cl. 71-1.000.

Gray, William Hugh: *See—*
Fawcett, John Anthony; and Gray, William Hugh, 3,706,485.

Greenberger, William, to Hopp Press Incorporated, The. Three-dimensional molding sign and method of fabricating same. 3,706,150, Cl. 40-124.100.

Greenwood, Arthur R.; Heinze, Walter W.; Schnitta, Edward; and Boyd, David M., to Universal Oil Products Company. Multiple-stage stacked reactor system for moving bed catalyst particles. 3,706,536, Cl. 23-288.00g.

Gregory, Walter D.: *See—*
Smith, Thomas M.; and Gregory, Walter D., 3,706,626.

Grenda, Hans August Herbert, to Holzer, W., & Co., KG. Fork-shaped one-piece electrical spring contacts. 3,706,960, Cl. 339-258.000.

Grenier, Andre. Ventilated garments. 3,706,102, Cl. 2-84.000.

Grey, Donald M.; Butler, Lee D.; Welker, Jerry W.; and Crane, Jack W. Method of handling bales. 3,706,389, Cl. 214-152.000.

Grier, John D.; and Hall, Maclin S., to Owens-Illinois, Inc. Electrode configuration for AC pip electrophotography. 3,706,552, Cl. 96-1.400.

Griess, Wilhelm: *See—*
Barth, Hans; Knausenberger, Martin; Lange, Henner; Menz, Hans-Udo; and Griess, Wilhelm, 3,706,675.

Griess-Tomtschuk, Irene: *See—*
Barth, Hans; Knausenberger, Martin; Lange, Henner; Menz, Hans-Udo; and Griess, Wilhelm, 3,706,675.

Griffin, Bobby I.: *See—*
Olsen, Larry C.; Seeman, Stephen E.; Griffin, Bobby I.; and Ambrose, Charles J., 3,706,893.

Griffiths, Colin: *See—*
Anderson, C. H.; and Griffiths, Colin, 3,706,449.

Grimm, Werner; Olschewski, Karl H.; and Sack, Rolf E., to Shell Oil Company. Apparatus and method for heating shaft furnaces with fuel gas. 3,706,520, Cl. 43-10.000.

Grinninger, Lowell D., to National Distillers and Chemical Corporation. Control of molecular weight in the production of alfin polymers. 3,706,721, Cl. 260-82.100.

Grivas, John C., to Sherwin-Williams Company, The. 2-(1-Adamantanyl)-1,2-benzisothiazolin-3-one. 3,706,758, Cl. 260-304.000.

Grochowski, Edward G.: *See—*
Chappelow, Ronald E.; Elijah, Leo E.; Elliott, Virgil L.; Grochowski, Edward G.; Harrison, Harry D.; Tice, Homer A.; and York, Ralph S., 3,707,003.

Gross, Ralph H., III: *See—*
Cross, Ralph Herbert, III, 3,706,382.

Grundy, Brian; and Hampson, Peter Samuel, to Plessey Handel und Investments A.G. Means for supervision of the control of telecommunications switching networks. 3,706,856, Cl. 179-18.0ge.

Gruska, Ralph, to SEBEC Societe d'Exploitation de Brevets d'Emballage Cosmetique, SA. Case for lipsticks and other pasty products. 3,706,354, Cl. 401-78.000.

Gruska, Ralph, to SEBEC Societe d'Exploitation de Brevets d'Emballage Cosmetique S.A. Holders for housing pasty materials. 3,706,500, Cl. 401-78.000.

GTE Automatic Electric Laboratories Incorporated: *See—*
Pitroda, Satyan G.; and Rekiere, Bernard J., 3,706,855.

GTE Sylvania Incorporated: *See—*
Neal, Charles Bailey; and Scott, Benton Boyd, 3,706,849.
Peterson, Carl L., 3,706,898.
Siwko, Karol, 3,706,846.

Gulf Research & Development Company: *See—*
Bryson, Millard C.; McKinney, Joel D.; and Murphy, James R., 3,706,654.
Deffner, John F., 3,706,836.
Franke, Norman W.; Paviak, Stanley C.; and Porter, Warren K., Jr., 3,706,676.
Heilman, William J., 3,706,703.
Heilman, William J., 3,706,704.
Paraskos, John A.; and Somers, Allen E., 3,706,657.
Patel, Natu R., 3,706,547.

Gumprecht, William Henry: *See—*
Blackwell, John; Gumprecht, William Henry; and Starn, Roy Emerson, Jr., 3,706,525.

Gunn, David P.: *See—*
Gerstenberger, Roland W.; and Gunn, David P., 3,706,450.

Gustafson, Robert D.: *See—*
Bayle, Guy P.; Smyth, Richard K.; and Gustafson, Robert D., 3,706,988.

Gynt, Lars; and Holm, Lennart, to Linden-Alimak AB. Hoisting crane. 3,706,285, Cl. 104-124.000.

Hackenberg, Hubert: *See—*
Engelsmann, Dieter; Hackenberg, Hubert; and Deeg, Karl, 3,706,268.

Hacklander, Egon H.; Hirshfeld, Julian J.; and Reuben, Bertie J., to Monsanto Company. Saccharine assisted basic dyeing of nylon. 3,706,529, Cl. 8-172.000.

Haefner, John A., to Eastman Kodak Company. Photographic diffusion transfer product and process. 3,706,568, Cl. 96-29.00r.

Haemonetics Corporation: *See—*
Latham, Allen, Jr., 3,706,412.

Hafner, Theodore. Frequency adjustment for two-way video transmission. 3,706,996, Cl. 343-186.000.

Hagan, James J.; Chanod, Edward E.; Feldman, Robert S.; and Cords, Helmuth, to Squibb, E. R., & Sons., and Inc. Process for removal of particle-forming proteins from blood sera. 3,706,660, Cl. 210-21.000.

Hagan, Melvin A.; and Batista, Roy I., to TRW Inc. Tantalum clad niobium. 3,706,539, Cl. 29-195.000.

Hagemann, Hermann, to Bayer Aktiengesellschaft. Isocyanates and preparation thereof. 3,706,778, Cl. 260-455.0r.

Hager, Robert Bonner, to Pennwalt Corporation. Alkyl esters of fluoroalkyl dicarboxylic acids. 3,706,787, Cl. 260-481.00r.

Hait, Paul W.: *See—*
Skinner, James R.; Uitz, Mark O.; and Hait, Paul W., 3,706,439.

Hajto, Ernest Anthony: *See—*
Whitworth, Anthony James; Lees, William Arthur; Tung, Stephen Yi-Sun; and Hajto, Ernest Anthony, 3,706,581.

Halbeck, Werner B.; Quaal, John A.; Robbins, Clyde F.; Rutchik, Walter L.; and Ryczek, Lawrence J., to Cutler-Hammer, Inc. Remote control circuit breaker system. 3,706,916, Cl. 317-33.0sc.

Halker, Bruce B.: *See—*
Gibson, Fred D., Jr.; Rhees, Raymond C.; Gilson, James I.; and Halker, Bruce B., 3,706,646.

Hall, Maclin S.: *See—*
Grier, John D.; and Hall, Maclin S., 3,706,552.

Hall, Nelson Lee; and Slocum, Donald Hillman, to Du Pont de Nemours, E. I., and Company. Process for manufacture of an improved multi-colored plastic building product. 3,706,825, Cl. 264-75.000.

Halliburton Company: *See—*
Gardner, Tommy R., 3,706,669.

Hamamoto, Hiroshi: *See—*
Umehara, Hanji; Kimura, Takashi; and Hamamoto, Hiroshi, 3,706,550.

Hamblyn, Stephen Mark Lesley; Money, Anthony Patrick; Mackinnon, Ian Malcolm; and Trotter, John Edmund, to United States Borox & Chemical Corporation. Separable plasma torch apparatus. 3,706,652, Cl. 204-312.000.

Hamma, John: *See—*
Rapoza, Edward J.; Siegel, Maxwell E.; Estelle, Weems E.; Petrucci, Pasquale M.; Linarducci, Joseph S.; Hamma, John; and Montgomery, John, 3,706,499.

Hammann, Ingeborg: *See—*
Hoffmann, Hellmut; and Hammann, Ingeborg, 3,706,820.

Hampson, Peter Samuel: *See—*
Grundy, Brian; and Hampson, Peter Samuel, 3,706,856.

Hance, Harold V.: *See—*
Gillmer, Arnold H.; and Hance, Harold V., 3,706,991.

Hancks, Dorothy B.; and Moran, Stephen F., to United States of America, Navy. Steerable self-propelled submersible. 3,706,293, Cl. 114-20.000.

Hanener, John W.; and Reyner, Franklin W. Selective dispenser with clip storage for dispensing small articles in preset quantities. 3,706,395, Cl. 221-119.000.

Hanna, John E., to National Semiconductor Corporation. Gain controlled amplifier for integrated circuit applications. 3,706,937, Cl. 330-28.000.

Hansen, Jay M.; Holscher, Donald J.; and Prince, Paul R., to Hughes Aircraft Company. SEC camera tube and image intensifier protection against excessive light damage. 3,706,903, Cl. 315-10.000.

Hansen, John Edward: *See—*
Curtin, Dennis Edward; and Hansen, John Edward, 3,706,111.

Hansen, Kirby W., Jr.: *See—*
Dickson, Robert L.; Johnson, George B.; and Hansen, Kirby W., Jr., 3,706,854.

Hapgood, William H., to Raytheon Company. Compact heat exchanger with high intensity burner. 3,706,303, Cl. 126-116.00r.

Harao, Norio: *See—*
Tsuneta, Asahide; and Harao, Norio, 3,706,909.

Hardung-Hardung, Heimo; Corsepius, Horst; and Hofmann, Hansdieter, to Vickers-Zimmer Aktiengesellschaft Planung und Bau von Industrieanlagen. Method of making cyclohexanol and cyclohexanone by oxidation of cyclohexane. 3,706,647, Cl. 204-162.0he.

Hardy, Frederick Edward, to Procter & Gamble Company, the. Bleaching agents and additives. 3,706,671, Cl. 252-99.000.

Harner, Robert H., to S & C Electric Company. Redundant, radio transmitter and receiver control systems for telemetering systems. 3,706,930, Cl. 325-56.000.

Harris-Intertype Corporation: *See—*
Hawkes, Thomas B.; and Hawkes, Richard B., 3,706,252.
Norman, Charles R., 3,706,298.

Harrison, Harry D.: *See—*
Chappelow, Ronald E.; Elijah, Leo E.; Elliott, Virgil L.; Grochowski, Edward G.; Harrison, Harry D.; Tice, Homer A.; and York, Ralph S., 3,707,003.

Hart, Atlee S. Indicating system for detecting gaseous and non-gaseous states. 3,706,981, Cl. 340-244.00r.

Hartlage, James A.; and McKillip, William J., to Ashland Oil, Inc. Process for the preparation of aminimides. 3,706,800, Cl. 260-561.00h.

Hartman, Thomas E.: *See—*
Aasen, T. F.; Hartman, Thomas E.; and Schaffel, Martin, 3,706,490.

Hartmann, Karl: *See—*
Gehlen, Hermann Walter; Hartmann, Karl; and Thieme, Gerhard, 3,706,209.

Harvey, Donald M., to Eastman Kodak Company. Camera bellows. 3,706,267, Cl. 95-39.000.

Hashirano, Masaru: *See—*
Deguchi, Masahiro; and Hashirano, Masaru, 3,706,425.

Haskins, Arlie W., to Nuclear Associates, Inc. Process for the preparation of a Sr^{90}-Y^{90} beta source in a radiation hazard free manner. 3,706,689, Cl. 252-301.1.

Hass, Robert H.; and Reeg, Cloyd P., to Union Oil Company of California. Hydrocracking of nitrogen containing feedstocks. 3,706,658, Cl. 208-111.000.

Hasson, Harrith M., to Hollister Incorporated. Gynecological instrument. 3,706,307, Cl. 128-2.00s.

Hastings, Garth W., to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Method of making pyrotechnic composition containing a polysulphide polymer. 3,706,611, Cl. 149-44.000.

Hatada, Yasutaka: *See—*
Usamoto, Teruyoshi; Hatada, Yasutaka; Furuichi, Itsuro; and Matsuo, Masao, 3,706,819.

Hatakeyama, Lawrence F., to United States of America, National Aeronautics and Space Administration. Method and system for ejecting fairing sections from a rocket vehicle. 3,706,281, Cl. 102-49.500.

Hatcher, Burrell R.; Miccioli, Aldo R.; Mohr, Max C.; and Sheldon, Edward J., to Raytheon Company. Multiple interleaved phased antenna array providing simultaneous operation at two frequencies and two polarizations. 3,706,998, Cl. 343-754.000.

Hausner, Jerry, to Narda Microwave Corporation, The. High frequency sweep generator. 3,706,940, Cl. 331-76.000.

Hawkes, Richard B.: *See—*
Hawkes, Thomas B.; and Hawkes, Richard B., 3,706,252.

Hawkes, Thomas B.; and Hawkes, Richard B., to Harris-Intertype Corporation. Book cut-off saw. 3,706,252, Cl. 83-470.000.

Hawkins, Roy: *See—*
Ffowces-Williams, John Eirwyn; Hawkins, Roy; Dawson, Hylton; and Smith, William, 3,706,353.

Hay, Warren H.: *See—*
Kopelman, Bernard; and Hay, Warren H., 3,706,521.

Hayashi, Jun: *See—*
Nagae, Tadashi; Oishi, Yasushi; and Hayashi, Jun, 3,706,556.

Hayes, Charles U.: *See—*
Bonafino, Edward J.; Doolittle, Frederick W.; Hayes, Charles U.; and Yarrington, James C., 3,706,370.

Hayman, David Frank: *See—*
Stephenson, Oliver; Wild, Anthony Musgrave; and Hayman, David Frank, 3,706,782.

Hayner, Paul F.; and Eldridge, David G., to Sanders Associates, Inc. Ball flow control valve. 3,706,323, Cl. 137-625.300.

Heer, John, to Varian Associates. Surface barrier diode having a hypersensitive N region forming a hypersensitive voltage variable capacitor. 3,706,128, Cl. 29-578.000.

Heiba, El-Ahmadi I.: *See—*
Stournas, Stamoulis; Heiba, El-Ahmadi I.; and Dessau, Ralph M., 3,706,541.

Heilman, William J., to Gulf Research & Development Company. Process for the preparation of cyclic acid anhydrides. 3,706,703, Cl. 260-78.50t.

Heilman, William J., to Gulf Research & Development Company. Preparation of C_6-C_{10} olefin-maleic anhydride copolymers. 3,706,704, Cl. 260-78.50r.

Heinze, Walter W.: *See—*
Greenwood, Arthur R.; Heinze, Walter W.; Schnitta, Edward; and Boyd, David M., 3,706,536.

Helgeson, Peter L.; and Egervary, Tibor I., to Raytheon Company. Continuous clean oven conversion. 3,706,302, Cl. 126-19.00r.

Heller, Hansjarg: *See—*
Kirchmayr, Audolph; Peterli, Hans Jakob; and Heller, Hansjarg, 3,706,700.

Heller, William C., Jr.: *See—*
Leatherman, Alfred F., 3,706,176.

Helmer, Josef, to Daimler-Benz Aktiengesellschaft. Form-locking connection of torque-transmitting structural parts, especially in automatic motor vehicle transmissions. 3,706,364, Cl. 192-48.920.

Helms, August R.: *See—*
Brightmire, Glenn K.; Bossler, Alfred T.; Burnell, Arthur E.; and Helms, August R., 3,706,330.

Hendges, Louis W. Mirrored marine aquarium. 3,706,299, Cl. 119-5.000.

Henrick, Clive A.; and Siddall, John B. Epithio-thiol-dienoates. 3,706,733, Cl. 260-327.00e.

Henry, Nelson R. Automatic filling and weighing apparatus. 3,706,587, Cl. 177-1.000.

Herbert, Hugh P.; and Pelofsky, Arnold H., to Cities Service Oil Company. Regeneration of spent alkylation acid. 3,706,648, Cl. 204-162.00s.

Herbst, Burton C.: *See—*
Herbst, Lewis R.; Herbst, Burton C.; and Herbst, Wayne K., 3,706,356.

Herbst, Lewis R.; Herbst, Burton C.; and Herbst, Wayne K. Vehicle hoist. 3,706,356, Cl. 187-8.590.

Herbst, Wayne K.: *See—*
Herbst, Lewis R.; Herbst, Burton C.; and Herbst, Wayne K., 3,706,356.

Hercules Incorporated: *See—*
Brack, Karl, 3,706,685.
Brack, Karl, 3,706,715.
Thomson, J. Brent, 3,706,592.
Vandenberg, Edwin J., 3,706,706.

Herd, Joseph, to Maschienefabrik Goebel GmbH. Perforating mechanism. 3,706,250, Cl. 83-345.000.

Herold, Carl D., Jr.: *See—*
Bidell, Frederick W.; Herold, Carl D., Jr.; and Lindholm, James H., 3,706,933.

Herr, Milton E.; Murray, Herbert C.; and Fonken, Gunther S., to Upjohn Company, The. 1-Aminoadamantan-4-ols. 3,706,801, Cl. 260-563.00p.

Herrick, Franklin Willard: *See—*
Gray, Kenneth Russell; Van Blaricom, Lloyd Eugene; Herrick, Franklin Willard; and Deweyert, Harvey Rudolph, 3,706,545.

Hershenson, Fred M., to Searle, G. D., & Co. 1-Carbamoyl-2-phenyliminopyrrolidines. 3,706,766, Cl. 260-326.300.

Herz, Arthur H.; Burness, Donald M.; and Seus, Edward J. Photographic materials and processes for developing photographic compositions. 3,706,562, Cl. 96-66.300.

Herzer, Kurt, Company: *See—*
Mertens, Wolfgang, 3,706,472.

Heseltine, Donald W.; and Eldredge, Carl H., to Eastman Kodak Company. Organic photoconductors spectrally sensitized with merocyanine dyes containing a triazolo- or tetrazolo-(1,5-a)pyrimidin-7(6H)-one nucleus. 3,706,555, Cl. 96-1.600.

Hess, Hans-Jurgen Ernst: *See—*
De Angelis, Gerald George; and Hess, Hans-Jurgen Ernst, 3,706,747.

Hewlett-Packard Company: *See—*
Mordan, William J., 3,706,904.

Heyman, Philip Michael; and Gorog, Istvan, to RCA Corporation. Method of improving the α of a cathodochromic display device. 3,706,845, Cl. 178-7.50d.

Higase, Shiro, to Ishihara Sangyo Kaisha, Ltd. and Japan Monopoly Corporation, The. Method of cultivating tobacco and aqueous solution to be used therefor. 3,706,546, Cl. 71-78.000.

Hikota, Toyohiko: *See—*
Toki, Masamichi; Hikota, Toyohiko; and Okamoto, Miyoshi, 3,706,613.

Hiller, Gary L., to Eastman Kodak Company. Supersensitized photographic emulsions. 3,706,567, Cl. 96-126.000.

Hilton, Ralph W.; and Moudry, Gilbert A. Method for the manufacture of an aluminum cartridge case. 3,706,118, Cl. 29-1.300.

Hirane, Seiichi; Aya, Masahiro; and Kishino, Shigeo, to Nihon Tokushu Noyaku Seizo Kabushiki Kaisha and Farbenfabriken Bayer Aktiengesellschaft. Certain O-alkyl-s-phenyl-phosphonothiolate fungicides. 3,706,832, Cl. 424-217.000.

Hirota, Itaru. Friction reduced conveying apparatus of helical chain conveyor type. 3,706,371, Cl. 198-181.000.

Hirshfeld, Julian J.: *See—*
Hacklander, Egon H.; Hirshfeld, Julian J.; and Reuben, Bertie J., 3,706,529.

Hishida, Yukio; Nakai, Toshio; and Kuzuya, Susumu, to Brother Kogyo Kabushiki Kaisha. Repeat typing mechanism for power operated typewriters. 3,706,366, Cl. 197-17.000.

Hjermstad, Erling T.; and Rajtora, Otto J., to Penick & Ford Limited. Method of controlling etherification of granule starch with an alkali-consuming etherifying reagent. 3,706,730, Cl. 260-233.30r.

Hjermstad, Erling T., to Kcinep & Drof, Inc., mesne. Process of preparing highly substituted hydroxyalkyl ethers of uninhibited granule starches substantially free of salts and glycols, and resulting products. 3,706,731, Cl. 260-233.30r.

Hobart Manufacturing Company: *See—*
Fox, Gerald B.; Dudley, Wray E.; and Athey, Stuart E., 3,706,317.

Hobert, Herbert: *See—*
Bohm, Heinz-Dieter; Muller, Unna Wolfgang; and Hobert, Herbert, 3,706,365.

Hodogaya Chemical Industry Co., Limited: *See—*
Ozutsumi, Minoru; Maeda, Shigeo; and Nakajyo, Teruo, 3,706,725.

Hoffman, Joseph Willard; and Demler, Henry William, Sr., to AMP Incorporated. Crimping tool and die assembly. 3,706,219, Cl. 72-402.000.

Hoffmann, Hans: *See—*
Leontaritis, Lambis; Schon, Nikolaus; and Hoffmann, Hans, 3,706,124.

Hoffmann, Hellmut; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. S-alkylmercapto methylthiophosphoric or phosphoric acid esters. 3,706,820, Cl. 260-940.000.

Hoffmann-La Roche Inc.: *See—*
Albrecht, Harry Allen; and Plati, John Thomas, 3,706,761.
Edenhofer, Albrecht; Ramuz, Henri; and Spiegelberg, Hans, 3,706,755.
Fryer, Rodney Ian; and Sternbach, Leo Henryk, 3,706,734.

Hofmann, Hansdieter: *See—*
Hardung-Hardung, Heimo; Corsepius, Horst; and Hofmann, Hansdieter, 3,706,647.

Hoke, Gilbert J., to Dunlop Tire and Rubber Corporation. Tire thread. 3,706,334, Cl. 152-209.000.

Holker, Kenneth: *See—*
Vessey, Clifford A.; Albon, Colin; and Holker, Kenneth, 3,706,603.

Holland, Frank J. System for exhausting gaseous products of combustion. 3,706,290, Cl. 110-184.000.

Hollister Incorporated: *See—*
Hasson, Harrith M., 3,706,307.

Hollister, Kenneth Robert; Perry, Ernest John; and Dappen, Glen Marshall, to Eastman Kodak Company. Process for forming silver halide crystals in the presence of amphiphilic copolymers. 3,706,564, Cl. 96-114.000.

Holm, Lennart: *See—*
Gynt, Lars; and Holm, Lennart, 3,706,285.

Holscher, Donald J.: *See—*
Hansen, Jay M.; Holscher, Donald J.; and Prince, Paul R., 3,706,903.

Holz, Hans; Kleep, Christian; and Koll, Gunter, to Schonzlin Klein & Becker, Aktiengesellschaft. Reactor liquid circulating pump arrangement. 3,706,513, Cl. 417-360.000.

Holzer, Alexander: *See—*
Sprick, Walter F.; Morse, Frank C.; Holzer, Alexander; Meller, Oscar W.; and Lovich, John W., 3,706,392.

Holzer, Karl, to Laevosan-Gesellschaft Chem. Pharm. Industrie Frank & Dr. Freudl. Polyfructosan trinicotinates. 3,706,732, Cl. 260-234.00r.

Holzer, W., & Co., KG: *See—*
Grenda, Hans August Herbert, 3,706,960.

Honda Motor Company, Ltd.: *See—*
Fukuda, Tadanori; Takahashi, Masao; Ogihara, Shoji; and Sekiya, Masato, 3,706,589.

Honeywell Inc.: *See—*
Wilwerding, Dennis J., 3,706,911.

Hooker Chemical Corporation: *See—*
Camilleri, Louis T.; and Forgione, Anthony F., 3,706,710.
Miller, George T., 3,706,602.

Hope, Paul: *See—*
Dobinson, Bryan; Hope, Paul; and Winterbottom, Kenneth, 3,706,528.

Hopkins, John P., to Hopkins, John P., Co. Pipe line construction method. 3,706,125, Cl. 29-428.000.

Hopkins, John P., Co.: *See—*
Hopkins, John P., 3,706,125.

Hopp Press Incorporated, The: *See—*
Greenberger, William, 3,706,150.

Hopton, Thomas E.; and Socha, Robert P., to Goodyear Tire & Rubber Company, The. Vinyl resin blowable into a rigid smooth skin microcellular profile. 3,706,679, Cl. 260-2.50e.

Horizons Incorporated: *See—*
Wainer, Eugene, 3,706,673.

Horner, Patrick James, to Imperial Chemical Industries Limited. Production of sulphonyl chlorides. 3,706,794, Cl. 260-543.00r.

Horton, Herbert D. Rotary pipe straightener. 3,706,215, Cl. 72-99.000.

Houlihan, William J.: *See—*
Anderson, Paul L.; Houlihan, William J.; and Manning, Robert E., 3,706,744.

Hoult, David Parks: *See—*
Cross, Ralph Herbert, III, 3,706,382.

Hoult, Raymond Oliver, to Coal Industry (Patents) Limited. Apparatus for rinsing small particulate material. 3,706,416, Cl. 239-193.000.

Howard, Vesper J.: *See—*
Dehlin, Leone S.; and Howard, Vesper J., 3,706,104.

Howell, Mark I., to Electrolocation Limited. Plotting apparatus for use in conjunction with surveying instruments. 3,707,002, Cl. 346-33.00m.

Hoya Glass Works: *See—*
Matsuura, Takashi; and Chikanon, Mitsuo, 3,706,688.

Hoyt, John M.; and Koch, Karl, to National Distillers and Chemical Corporation. Alpha-methyleneglutarimide polymers and copolymers and preparation thereof. 3,706,716, Cl. 260-78.0va.

Hruby, John O., Jr., to Rain Jet Corporation. Liquid discharge nozzles. 3,706,415, Cl. 239-107.000.

Huba, Francis: *See—*
Bride, John Edwin; and Huba, Francis, 3,706,639.

Huba, Francis; and Bride, John Edwin, to Du Pont de Nemours, E. I., and Company. Chromium plating with chromic compound and organic additive. 3,706,641, Cl. 204-51.000.

Huba, Francis, to Du Pont de Nemours, E. I., and Company. Chromium plating bath containing chromic compound and organic component. 3,706,643, Cl. 204-51.000.

Huber, Buel D.; and Enloe, Howard M. System for heating a section of pipe. 3,706,824, Cl. 263-2.00r.

Hudson, Charles D., to Wyckoff Company. Wood treating composition. 3,706,580, Cl. 106-15.0af.

Huebner, David J.; and Meddaugh, Michael D., to Dow Corning Corporation. Method of preparing a silicone emulsion and regenerating same and electrically conductive product. 3,706,695, Cl. 117-226.000.

Hughes Aircraft Company: *See—*
Gillmer, Arnold H.; and Hance, Harold V., 3,706,991.
Hansen, Jay M.; Holscher, Donald J.; and Prince, Paul R., 3,706,903.
Koussa, Edward T.; and Iboshi, Lawrence K., 3,706,906.

Hughes, David Geoffrey, to Decca Limited. Receivers for phase comparison radio navigation systems. 3,706,995, Cl. 343-105.00r.

Hughes, Richard Smith, to United States of America, Navy. Amplitude independent, automatic frequency control discriminator. 3,706,932, Cl. 325-438.000.

Hughes, Richard Smith. Pulse repetition frequency detection and lock-on system. 3,706,935, Cl. 328-155.000.

Hull, Colin G.; and Boor, John, Jr., to Shell Oil Company. Aliphatic polycarbonates. 3,706,713, Cl. 260-77.50d.

Hunt, Jerry Donald: *See—*
Smith, Sydney; Hunt, Jerry Donald; and Esler, Richard Brotherton, 3,706,222.

Hurlburt, Joseph C.; and Freimuth, John H., to Sperry Rand Corporation. Suspension system for a mower unit. 3,706,186, Cl. 56-15.800.

Hurst, John, to Grace, W. R., & Co. Jointed concrete structures. 3,706,264, Cl. 94-17.000.

Hyde, Robert W. Aerator. 3,706,418, Cl. 239-428.500.

Iantorno, James, to Sealectro Corporation. Fastening system. 3,706,957, Cl. 339-126.00r.

Iboshi, Lawrence K.: *See—*
Koussa, Edward T.; and Iboshi, Lawrence K., 3,706,906.

Ikegami, Hideo, to Fujitsu Limited. Gaseous discharge device utilizing cyclotron resonance of electron display. 3,706,912, Cl. 315-169.0tv.

Imperial Chemical Industries Limited: *See—*
Bremner, James Duncan; and McLellan, Ian Alexander, 3,706,826.
Cairns, John Francis, 3,706,752.
Campbell, Alastair; and Carruthers, Rosemary Angela, 3,706,816.
Davis, Anthony Charles; and Amos, Brian Franklyn, 3,706,195.
Gilks, James Harris, 3,706,542.
Horner, Patrick James, 3,706,794.
Keith, Donald George, 3,706,172.
Nott, Robert Edward; and Lander, David Robin, 3,706,827.
Pumphrey, Nicholas William James; and Moss, Keith Graham, 3,706,600.

Inagaki, Junpei, to Tokyo Shibuara Electric Company, Limited. Linear comb-shaped synchronous motor. 3,706,922, Cl. 318-135.000.

Inose, Hideo, to Aisin Seiki Kabushiki Kaisha. Power steering mechanism. 3,706,262, Cl. 91-378.000.

Institut Francais du Petrole des Carburants Lubrifiants: *See—*
Salle, Robert; Sillion, Bernard; and De Gaudemaris, Gabriel, 3,706,803.

International Business Machines Corporation: *See—*
Acquadro, Edward W.; and Monahan, Donald F., 3,706,973.
Barrager, Stephen M.; Bate, Geoffrey; and Smith, Sidney H., 3,706,926.
Bickford, Jerome R.; and Nicholson, James O., 3,706,887.
Bonafino, Edward J.; Doolittle, Frederick W.; Hayes, Charles U.; and Yarrington, James C., 3,706,370.
Chappelow, Ronald E.; Elijah, Leo E.; Elliott, Virgil L.; Grochowski, Edward G.; Harrison, Harry D.; Tice, Homer A.; and York, Ralph S., 3,707,003.
Dailey, Jack R.; and Kuntzleman, Harry C., 3,706,977.
Dailey, Jack R.; Kuntzleman, Harry C.; and Surgent John G., 3,706,978.
Donofrio, Nicholas M.; and Linton, Richard H., 3,706,891.
Furman, Rudolph S.; and Zimmer, Jerrold F., 3,706,491.
Godoy, Humbert C.; and Vogelsberg, R. Eric, 3,706,879.
Johnson, Oliver Duane, 3,706,238.
Li, Pei-Ching; and Tsang, Paul J., 3,706,597.
Lynott, John J., 3,706,857.
Oktay, Sevgin; and Schmeckenbecher, Arnold F., 3,706,127.
Palmer, Myron D., 3,706,612.
Patrick, Robert L.; and Richard, Patrick L., 3,706,974.
Prahl, Marvin E., 3,706,426.
Tagawa, James M., 3,706,979.
Yakubowski, Carl, 3,706,475.

International Flavors and Fragrances, Inc.: *See—*
Katz, Ira; Evers, William John; and Giacino, Christopher, 3,706,577.

International Standard Electric Corporation: *See—*
Brisse, Jacques Daniel Philippe; and Joguet, Jean-Claude, 3,706,992.

International Telephone and Telegraph Corporation: *See—*
Blanchenot, John P., 3,706,958.
Gray, Kenneth Russell; Van Blaricom, Lloyd Eugene; Herrick, Franklin Willard; and Deweyert, Harvey Rudolph, 3,706,545.
Miller, Charles Eveleigh, 3,706,220.
Redmann, Jerome J., 3,706,493.

Intersil Incorporated, mesne: *See—*
Moyle, Kenneth J.; and Mann, Richard S., 3,706,840.

Iozza, Emanuele. Ice breaking passive bow. 3,706,295, Cl. 114-41.000.

Ippolito, Anthony C.: *See—*
Arsem, Alvan D.; Schwartz, Harold O.; and Ippolito, Anthony C., 3,706,837.

Irwin, Arthur S., to TRW Inc. Heat transfer bearing mounting. 3,706,483, Cl. 308-77.000.

Isachsen, Henning: *See—*
Patterson, Roger Lee; and Isachsen, Henning, 3,706,345.

Ishida, Hiroshi; and Mukai, Minoru, to Fuji Photo Film Co., Ltd. Inclination correcting device for bags carrying fasteners. 3,706,369, Cl. 198-33.0ad.

Ishihara Sangyo Kaisha, Ltd.: *See—*
Higase, Shiro, 3,706,546.

Ishii, Shogo, to Syntak Company, Ltd. Nail buffer. 3,706,316, Cl. 132-76.400.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Saiga, Yoshinori; and Mohri, Kazunori, 3,706,343.

Itek Corporation: *See—*
Grain, Clark F., 3,706,560.
Sprague, Robert H., 3,706,559.

Ito, Fukuzo; Sekine, Masaoki; and Arai, Yasusuke, to Tokyo Denki Kagaku Kogyo Kabushiki Kaisha. Endless tape cartridge. 3,706,422, Cl. 242-55.19a.

Ito, Itsuya: *See—*
Nabeta, Saburo; Yamada, Yuzo; and Ito, Itsuya, 3,706,779.

ITW-Ateco G.m.b.H.: *See—*
Wibrow, Gunter, 3,706,391.
J/D Scientific: *See—*
Jensen, David R., 3,706,158.
Jackson, Byron, Inc.: *See—*
Wilms, Carl Alfred, 3,706,243.
Jackson, Lloyd J.: *See—*
Willard, Robert C.; Craig, Jimmie M.; and Jackson, Lloyd J., 3,706,277.
Japan Monopoly Corporation, The: *See—*
Higase, Shiro, 3,706,546.
Jedrychowski, Jerzy L.; and Robinson, Peter, to Raytheon Company. Variable phase equalizer. 3,706,947, Cl. 333-28.00r.
Jedvall, Gustaf I.; deceased (by Mogensen, Arne; administrator). Method for measuring the absolute distance to a leakage fault in an electrical conductor. 3,706,927, Cl. 324-52.000.
Jefferson Chemical Company, Inc.: *See—*
Lloyd, Rodney Frederick; and Cuscurida, Michael, 3,706,714.
Jeger, Oskar: *See—*
Wehrli, Hansuli; and Jeger, Oskar, 3,706,737.
Jeger, Oskar; and Wehrli, Hans Ueli, to Ciba-Geigy Corporation. 19-Hydroxy-3-aza-a-homo-steroids. 3,706,736, Cl. 260-239.0bb.
Jensen, David R., to J/D Scientific. Multi-magnet magnetic toy. 3,706,158, Cl. 46-236.000.
Jensen Machinery Inc.: *See—*
Gerstenberger, Roland W.; and Gunn, David P., 3,706,450.
Jenson, Clark E. Tree medication capsule. 3,706,161, Cl. 47-57.500.
Jeument-Schneider: *See—*
Darmon, Jacques; and Coffre, Philippe, 3,706,985.
Jeumont-Schneider: *See—*
Ricaud, Pierre; and Cynober, Simon, 3,706,286.
Jeurissen, Lambert Gaston: *See—*
Conix, Andre Jan; and Jeurissen, Lambert Gaston, 3,706,699.
Conix, Andre Jan; and Jeurissen, Lambert Gaston, 3,706,711.
Jezuit, Arthur D.: *See—*
Young, William E.; and Jezuit, Arthur D., 3,706,174.
Jochimsen, William George: *See—*
Plotnikoff, Nicholas Peter; Dren, Anthony Thomas; and Jochimsen, William George, 3,706,831.
Joguet, Jean-Claude: *See—*
Brisse, Jacques Daniel Philippe; and Joguet, Jean-Claude, 3,706,992.
Johansen, Bent Georg, to Bristol-Myers Company. Hairwinder. 3,706,315, Cl. 132-33.00r.
John, Erwin Roy; and Laupheimer, Robert, to Newro-Data, Inc. Life detecting medical instrument. 3,706,308, Cl. 128-2.06r.
Johnson and Johnson Corporation: *See—*
Drelich, Arthur H.; and Bowman, Bobby R., 3,706,595.
Johnson, George B.: *See—*
Dickson, Robert L.; Johnson, George B.; and Hansen, Kirby W., Jr., 3,706,854.
Johnson, Guy L., to United States of America, Navy. Fluidic steering control. 3,706,263, Cl. 91-388.000.
Johnson, Oliver Duane, to International Business Machines Corporation. Apparatus and method for converting rotary to harmonic reciprocating motion. 3,706,238, Cl. 74-573.000.
Johnson, Robert E., to Pacific Car and Foundry Company. Cab tilt hydraulic circuit. 3,706,470, Cl. 296-28.00c.
Johnston, Robert R.: *See—*
Paulssen, Walter A.; and Johnston, Robert R., 3,706,361.
Johnston, Shaun C. Display assembly. 3,706,148, Cl. 40-77.700.
Jones, Darryl L.: *See—*
Mickelson, Grant A.; Jones, Darryl L.; and Baral, William J., 3,706,693.
Jones, Elwyn David; and Rowley, Edward Kenneth, to Canadian Industries Limited. Machine for fabricating bag handles. 3,706,625, Cl. 156-517.000.
Jones, Henry F. Ring puzzle with changeable number of rings. 3,706,458, Cl. 273-158.000.
Jones, Neville Murray: *See—*
Bell, Cyril Ove Robert; and Jones, Neville Murray, 3,706,665.
Joynes, Peter Leonard; and Maggs, Robert James, to Pye Limited. Chromatographic apparatus. 3,706,381, Cl. 210-198.00c.
Juhran, Wolfgang: *See—*
Fauland, Erich; Kampe, Wolfgang; Thiel, Max; Juhran, Wolfgang; Dietmann, Karl; and Stork, Harald, 3,706,728.
Jurow, Victor A.: *See—*
Phillips, Michael; and Jurow, Victor A., 3,706,419.
Kabushiki Kaisha Daini Seikosha: *See—*
Matsura, Eiichi, 3,706,197.
Kabushiki Kaisha Suwa Seikosha: *See—*
Fukushima, Takekazu, 3,706,198.
Kabushiki Kaisha Suwa Sukosha: *See—*
Kurita, Hirohisa, 3,706,196.
Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Umehara, Hanji; Kimura, Takashi; and Hamamoto, Hiroshi, 3,706,550.
Kadi, Frank J.; Longsworth, Ralph C.; and Meier, Richard N., to Air Products and Chemicals, Inc. Flexible cryogenic liquid transfer system and improved support means therefor. 3,706,208, Cl. 62-55.000.
Kadota, Shinsuke: *See—*
Saito, Noriaki; and Kadota, Shinsuke, 3,706,853.
Kaeding, Warren W.: *See—*
Etherington, Robert W., Jr.; and Kaeding, Warren W., 3,706,807.
Kalst, Manmohan S., to ACF Industries, Incorporated. Pressure drop variation compensating and valve positioning mechanism. 3,706,320, Cl. 137-487.000.
Kaltenbronn, James S., to Parke, Davis & Company. Acetic acid compounds and methods for their production. 3,706,767, Cl. 260-330.500.
Kaminski, Friedrich: *See—*
Cornelius, Werner; and Kaminski, Friedrich, 3,706,207.
Kampe, Wolfgang: *See—*
Fauland, Erich; Kampe, Wolfgang; Thiel, Max; Juhran, Wolfgang; Dietmann, Karl; and Stork, Harald, 3,706,728.
Kaneko, Keiji: *See—*
Tanaka, Hiroshisa; Wada, Mitiaki; and Kaneko, Keiji, 3,706,179.
Kaneko, Keiji; Shoji, Kitimaru; and Mukai, Minoru, to Fuji Photo Film Co., Ltd. Bag opening device. 3,706,180, Cl. 53-386.000.
Kasner, William. Calculator. 3,706,875, Cl. 235-74.000.
Katchalski, Ephraim; Goldstein, Leon; Levin, Yehuda; and Blumberg, Shmaryahu, to Monsanto Company. Preparation of water-insoluble enzyme derivatives. 3,706,633, Cl. 195-63.000.
Katcher, Emanuel Edward, to United States of America, Navy. Environmental safe and arm device for igniter for rockets and missiles. 3,706,258, Cl. 89-1.812.
Kato, Mahiko; Saito, Isamu; and Nishiba, Tuneo, to Tokico Ltd. Fixed quantity liquid supplying apparatus using fluidic devices. 3,706,398, Cl. 222-20.000.
Kato, Sinzo: *See—*
Masaki, Kenji; and Kato, Sinzo, 3,706,444.
Katz, Ira; Evers, William John; and Giacino, Christopher, to International Flavors and Fragrances, Inc. Sulfur-containing flavoring compositions and processes therefor. 3,706,577, Cl. 99-140.00r.
Kaufman Mfg., Co.: *See—*
Dorak, Marvin H., 3,706,506.
Kawakami, Takaya; Kitamura, Toshinori; Ajichi, Yoshio; and Ono, Masayoshi, to Nichicon Capacitor, Limited. High frequency filter. 3,706,949, Cl. 333-79.000.
Kcinep & Drof, Inc., mesne: *See—*
Hjermstad, Erling T., 3,706,731.
Kearnan, James Edward; and Newsbaum, Robert William, to Stauffer Chemical Company. Uniformly dispersible insoluble sulfur vulcanizing compositions. 3,706,708, Cl. 260-79.500.
Keitel, John C., to McGraw-Edison Company. Supervisory control system for selectively connecting recorders and transcribing stations. 3,706,858, Cl. 179-100.1dr.
Keith, Donald George, to Imperial Chemical Industries Limited. Foam laminates. 3,706,172, Cl. 52-521.000.
Keith, Norval A., to Olin Corporation. Process for slitting sheet metal. 3,706,246, Cl. 83-7.000.
Kellar, Richard L.: *See—*
Paelian, Owen; Rister, Donald R.; and Kellar, Richard L., 3,706,349.
Keller, Oscar: *See—*
Batcho, Andrew David; Berger, Julius; Furlenmeier, Andre; Keller, Oscar; Pecherer, Benjamin; Schocher, Arno Johannes; Spiegelberg, Hans; and Vaterlaus, Bruno Peter, 3,706,729.
Keller, Robert Christian: *See—*
Baumann, Hans-Peter; and Keller, Robert Christian, 3,706,530.
Kelley, Buster E.: *See—*
Welford, Gordon D.; and Kelley, Buster E., 3,706,429.
Kelly, Ralph E.: *See—*
Curtis, George L.; Riesenberg, James H.; and Kelly, Ralph E., 3,706,393.
Kelly, Richard Howard: *See—*
Martin, Preston Kuhn; and Kelly, Richard Howard, 3,706,672.
Kelsey-Hayes Company: *See—*
Stelzer, William, 3,706,477.
Kendall, Jerry A.: *See—*
Balmer, John D.; and Kendall, Jerry A., 3,706,241.
Kendrick, Gary R.: *See—*
Sauder, Robert A.; and Kendrick, Gary R., 3,706,870.
Kennedy, James S.: *See—*
Blanchard, Robert R.; Kennedy, James S.; and Roberts, Reginald F., 3,706,724.
Kerwin, Richard G.: *See—*
Milani, Dean L.; and Kerwin, Richard G., 3,706,313.
Keuerleber, Rudi; and Pahl, Fritz-Wilhelm, to Krauss-Moffei Aktiengesellschaft. Device for feeding flowable material to a mold cavity. 3,706,515, Cl. 425-4.000.
Keyworth, Donald A.: *See—*
Walker, David G.; and Keyworth, Donald A., 3,706,181.
Kicks, John C.; and Louth, Howard P., to Kulite Semiconductor Products. Particle impact protectors and assemblies thereof for pressure sensing transducers having diaphragms. 3,706,953, Cl. 338-4.000.
Kido, Keishiro: *See—*
Miyano, Shizuo; Kido, Keishiro; Kondo, Asaji; and Mizuki, Eiichi, 3,706,593.
Kiku Co.: *See—*
Shimosawa, Ron, 3,706,471.
Kikuchi, Shoji: *See—*
Ushiyama, Rintaro; Sugino, Osakazu; Sato, Shui; Sakamoto, Eiichi; Yamada, Hiroshi; and Kikuchi, Shoji, 3,706,563.
Kimura, Takashi: *See—*
Umehara, Hanji; Kimura, Takashi; and Hamamoto, Hiroshi, 3,706,550.

King, Charles S. W.; and Pierce, John H., to Bouligny, R. H., Inc. Piddler mechanism for strand material. 3,706,407, Cl. 226-97.000.
Kingsbury, James: *See—*
Folson, Henry J.; Boxley, Denis V.; Kingsbury, James; Kraitzer, Shlomo; Soulakis, George; and Whittington, Jimmie L., 3,706,153.
Kingsley, Bertis N.: *See—*
Luebbers, Earl H.; and Kingsley, Bertis N., 3,706,154.
Kinkead Industries, Inc.: *See—*
Ross, Howard C., 3,706,440.
Kirchmayr, Audolph; Peterli, Hans Jakob; and Heller, Hansjarg, to Ciba-Geigy Corporation. Use of bis-methylene malonic acid nitrides in light sensitive materials. 3,706,700, Cl. 106-178.000.
Kirk, Merritt C., Jr.: *See—*
Mills, Ivor W.; Dimeler, Glenn R.; and Kirk, Merritt C., Jr., 3,706,653.
Kirkpatrick, Milton E.; Reger, Jo L.; and Staudhammer, Karl P., to TRW Inc. Fabrication of composite material by uniting thin fiber coated polymerizable plastic sheets. 3,706,614, Cl. 156-151.000.
Kirpol, Franz: *See—*
Simon, Horst; and Kirpol, Franz, 3,706,265.
Kirsch, Francis William; Barmby, David S.; and Potts, John D., to Sun Oil Company. Continuous process for producing gasoline blending components. 3,706,814, Cl. 260-683.430.
Kishikawa, Toshiro: *See—*
Doi, Yoshikazu; Kishikawa, Toshiro; and Sunaga, Yasumasa, 3,706,484.
Kishino, Shigeo: *See—*
Hirane, Seiichi; Aya, Masahiro; and Kishino, Shigeo, 3,706,832.
Kisteneich, Heinz; and Proksa, Ferdinand, to Maschinenfabrik Hennecke GmbH. Apparatus for producing foam sections from components that react quickly with one another when mixed. 3,706,516, Cl. 425-141.000.
Kitamura, Hajime: *See—*
Koyanagi, Shunichi; Kitamura, Hajime; and Shimizu, Toshihide, 3,706,705.
Kitamura, Toshinori: *See—*
Kawakami, Takaya; Kitamura, Toshinori; Ajichi, Yoshio; and Ono, Masayoshi, 3,706,949.
Kleep, Christian: *See—*
Holz, Hans; Kleep, Christian; and Koll, Gunter, 3,706,513.
Klein, Hans-Christof, to Teves, Alfred, GmbH. Nonskid brake system for motor vehicle with pressurized hydraulic system. 3,706,479, Cl. 303-21.00f.
Klein, Milton. Rural delivery mail box. 3,706,411, Cl. 232-17.000.
Klein, Norman E., to Deering Milliken Research Corporation. Automatic belt doffer. 3,706,623, Cl. 156-394.000.
Kleinhans, Robert J.: *See—*
Bernett, Frank E.; and Kleinhans, Robert J., 3,706,696.
Kline, Richard L.; and Fogleman, Floyd F. Airfoil for aircraft. 3,706,430, Cl. 244-35.000.
Knapp, Philip B.; and Zogg, Jon R., to Aptek Industries, Inc. Agricultural planting apparatus having metering means. 3,706,396, Cl. 221-265.000.
Knauer, Warren L., Jr.: *See—*
Besier, Emil E.; and Knauer, Warren L., Jr., 3,706,844.
Knausenberger, Martin: *See—*
Barth, Hans; Knausenberger, Martin; Lange, Henner; Menz, Hans-Udo; and Griess, Wilhelm, 3,706,675.
Knell, Harvey A.; Olthoff, James A.; Scoggin, Barry A.; and Smith, Roger M., to Caterpillar Tractor Company. Self-loading mechanism for a scraper. 3,706,143, Cl. 37-4.000.
Knell, Martin: *See—*
Dexter, Martin; and Knell, Martin, 3,706,740.
Knorr-Bremse KG: *See—*
Schelle, Axel; and Baronnet, Pierre, 3,706,386.
Knuppel, Helmut; Brotzmann, Karl; Fassbinder, Hans-Georg; Savard, Guy; and Lee, Robert, to Eisenwerk-Gesellschaft Maximilianshutte mbH. Method for refining pig-iron into steel. 3,706,549, Cl. 75-60.000.
Kobori, Takeo: *See—*
Fujisawa, Tamotsu; Ohtsuka, Noriko; Kobori, Takeo; and Tsuchihashi, Genichi, 3,706,805.
Koch, Hans Adalbert: *See—*
Krall, Heriberi; and Koch, Hans Adalbert, 3,706,336.
Koch, Helmut: *See—*
Bucksch, Herbert; and Koch, Helmut, 3,706,145.
Koch, Karl: *See—*
Hoyt, John M.; and Koch, Karl, 3,706,716.
Koehring Company: *See—*
Briggs, Eugene C., 3,706,446.
Koenig, Horst: *See—*
Graf, Fritz; and Koenig, Horst, 3,706,770.
Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Yanagidaira, Hidetaka; Shintani, Sotokichi; and Michishita, Hisakichi, 3,706,945.
Kokx, Darrel D.; and Moore, Robert S., to Procter & Gamble Company, The. Self-spreading catamenial tampon. 3,706,311, Cl. 128-285.000.
Koll, Gunter: *See—*
Holz, Hans; Kleep, Christian; and Koll, Gunter, 3,706,513.
Komatsu, Akira: *See—*
Moroe, Tatsuo; Komatsu, Akira; Akutagawa, Susumu; Sakaguchi, Toshiaki; and Matsuyama, Hirokazu, 3,706,809.
Kondo, Asaji: *See—*
Miyano, Shizuo; Kido, Keishiro; Kondo, Asaji; and Mizuki, Eiichi, 3,706,593.
Konishiroku Photo Industry Co., Ltd.: *See—*
Ushiyama, Rintaro; Sugino, Osakazu; Sato, Shui; Sakamoto, Eiichi; Yamada, Hiroshi; and Kikuchi, Shoji, 3,706,563.
Kopacki, Adams F.: *See—*
Eilers, Kenneth L.; and Kopacki, Adams F., 3,706,686.
Kopelman, Bernard; and Hay, Warren H., to Sylvania Electric Products, Inc. Flashlamp. 3,706,521, Cl. 431-93.000.
Koranda, Clarence J.: *See—*
Fritz, William E.; and Koranda, Clarence J., 3,706,287.
Korpel, Adrianus, to Zenith Radio Corporation. Real-time acoustic imaging system. 3,706,965, Cl. 340-5.0mp.
Koussa, Edward T.; and Iboshi, Lawrence K., to Hughes Aircraft Company. Beam intensity control for different writing rates in a display system. 3,706,906, Cl. 315-22.000.
Kowalick, James F.: *See—*
Stiefel, Ludwig; Silverstein, Martin S.; and Kowalick, James F., 3,706,278.
Kowalski, Xavier, to Monsanto Company. Electrochemical compositions and processes. 3,706,634, Cl. 204-46.000.
Kowalski, Xavier, to Monsanto Company. Electrochemical compositions and processes. 3,706,635, Cl. 204-46.000.
Koyanagi, Shunichi; Kitamura, Hajime; and Shimizu, Toshihide, to Shinetsu Chemical Company. Method for suspension-polymerizing vinyl chloride. 3,706,705, Cl. 260-78.5cl.
Krafthefer, Kerry M., to Molex Incorporated. Connector and arrangement for circuit board assembly therewith. 3,706,954, Cl. 339-17.00l.
Kraitzer, Shlomo: *See—*
Folson, Henry J.; Boxley, Denis V.; Kingsbury, James; Kraitzer, Shlomo; Soulakis, George; and Whittington, Jimmie L., 3,706,153.
Krall, Heriberi; and Koch, Hans Adalbert, to Technica-Guss GmbH. Device for horizontal continuous casting of plates. 3,706,336, Cl. 164-281.000.
Kramer, James H., to Goodrich, B. F., Company, The. Vehicle suspension. 3,706,481, Cl. 305-27.000.
Kramer, Otis G., to United States of America, Air Force. Calorimeter for objects of low solar absorptivity. 3,706,226, Cl. 73-190.00h.
Krause, Rudolf J., to Rhewum Rheinische Werkzeug-u. Maschinenfabrik, G.m.b.H. Screen with differently tensioned surface zones. 3,706,376, Cl. 209-347.000.
Krauss-Moffei Aktiengesellschaft: *See—*
Keuerleber, Rudi; and Pahl, Fritz-Wilhelm, 3,706,515.
Kremers, Frank J.; and Rhodes, Michael S., to Allied Chemical Corporation. Alkenyl sulfosuccinic anhydrides, acids and salts thereof. 3,706,771, Cl. 260-346.800.
Krohn, Earl H., to Krohn-Hite Corporation. Selectively switched multi purpose electrical filter. 3,706,936, Cl. 330-21.000.
Krohn-Hite Corporation: *See—*
Krohn, Earl H., 3,706,936.
Krull, Irwin H.: *See—*
Cosgrove, Richard E.; Krull, Irwin H.; and Mask, Charles A., 3,706,649.
Kubodera, Seiiti: *See—*
Shiba, Keisuke; Sueyoshi, Tohru; Akira, Sato; Kubodera, Seiiti; and Tsubota, Motohiko, 3,706,566.
Kubota Iron & Machinery Works, Ltd.: *See—*
Nishiyama, Shigeru; Kusano, Hiroshi; Nagai, Yoshiro; and Miura, Satoshi, 3,706,615.
Kuck, John H., to United States of America, Navy. Search system. 3,706,993, Cl. 343-7.700.
Kulite Semiconductor Products: *See—*
Kicks, John C.; and Louth, Howard P., 3,706,953.
Kumm, John H. Resistage candle device. 3,706,523, Cl. 431-126.000.
Kuntzleman, Harry C.: *See—*
Dailey, Jack R.; and Kuntzleman, Harry C., 3,706,977.
Dailey, Jack R.; Kuntzleman, Harry C.; and Surgent John G., 3,706,978.
Kurita, Hirohisa, to Kabushiki Kaisha Suwa Sukosha. Construction of thin timepiece. 3,706,196, Cl. 58-52.000.
Kurotschka, Georg: *See—*
Siebecker, Hans; Wichmann, Gunter; and Kurotschka, Georg, 3,706,886.
Kusano, Hiroshi: *See—*
Nishiyama, Shigeru; Kusano, Hiroshi; Nagai, Yoshiro; and Miura, Satoshi, 3,706,615.
Kuzuya, Susumu: *See—*
Hishida, Yukio; Nakai, Toshio; and Kuzuya, Susumu, 3,706,366.
La Forgia, Salvatore F., to United States of America, Army. Photochromic projection system. 3,706,487, Cl. 353-11.000.
La Valle, Thomas A., to Western Electric Company, Incorporated. Apparatus for assembling electrical components. 3,706,122, Cl. 29-203.00d.
Labat, Yves: *See—*
Esclamadon, Christian; Labat, Yves; and Signouret, Jean-Baptiste, 3,706,806.
Ladco Enterprises Limited: *See—*
Rausing, Gad Anders, 3,706,260.
Laevosan-Gesellschaft Chem. Pharm. Industrie, Franck & Dr. Freudl: *See—*
Beran, Wilhelmine, 3,706,727.

Laevosan-Gesellschaft Chem. Pharm. Industrie Frank & Dr. Freudl: *See—*
Holzer, Karl, 3,706,732.
Lafleur, Hector. Loose leaf binding mechanism. 3,706,502, Cl. 402-17.000.
Laitram Corporation, The: *See—*
Lapeyre, James M.; and Couret, Robert F., 3,706,113.
Lampathakis, Kyriakose: *See—*
Seelbach, Walter C.; and Lampathakis, Kyriakose, 3,706,130.
Landel, Robert F.: *See—*
United States of America, National Aeronautics and Space Administration, 3,706,221.
Lander, David Robin: *See—*
Nott, Robert Edward; and Lander, David Robin, 3,706,827.
Landry, Delphin H.; and Biby, Howard A. Snell-tying implement. 3,706,466, Cl. 289-17.000.
Lang, Walter: *See—*
Froehlich, Walter; and Lang, Walter, 3,706,851.
Lange, Henner: *See—*
Barth, Hans; Knausenberger, Martin; Lange, Henner; Menz, Hans-Udo; and Griess, Wilhelm, 3,706,675.
Langieri, Michael, Jr.; and Watts, Lennox, to Questor Corporation. Educational toy adding machine. 3,706,876, Cl. 235-74.000.
Lanier Electronic Laboratory, Inc.: *See—*
Nye, William M., 3,706,859.
Lapeyre, James M.; and Couret, Robert F., to Laitram Corporation, The. Insert holddown devices. 3,706,113, Cl. 17-73.000.
Lapidas, Manuel; and Maull, John C. Yarn winding mechanism. 3,706,420, Cl. 242-43.000.
Larkin, Donald R., to Celanese Corporation. Preparation of bis (2-hydroxyalkyl) esters of terephthalic or isophthalic acid. 3,706,785, Cl. 260-475.0pr.
Lasser, Howard G., to United States of America, Army. Process including photolytic enhancement for anodic dissolution of a gallium arsenide wafer. 3,706,645, Cl. 204-143.0ge.
Latham, Allen, Jr., to Haemonetics Corporation. Pressure-actuated centrifuge chuck and centrifuge incorporating the same. 3,706,412, Cl. 233-1.00b.
Laub, Leonard J., to Zenith Radio Corporation. Narrow-bandwidth television system. 3,706,843, Cl. 178-6.800.
Laupheimer, Robert: *See—*
John, Erwin Roy; and Laupheimer, Robert, 3,706,308.
Lawrence, Ray V.: *See—*
Takeda, Hiroshi; Schuller, Walter H.; Lawrence, Ray V.; and Block, Seymour S., 3,706,762.
Le Quinquis, Jean Pierre, to Compagnie d'Etudes et de Recherches des Services Operationnels d'Assainissement en France Compagnie SAAF. Apparatus for treatment of sewage. 3,706,380, Cl. 210-197.000.
Leatherman, Alfred F., to Heller, William C., Jr. Closure member and method for closing containers. 3,706,176, Cl. 53-42.000.
Lederer, Edwin H., to General Electric Company. Semiconductor lead attachment system including a semiconductor pellet orientation plate. 3,706,409, Cl. 228-6.000.
Lee, Kyu Tai, to Du Pont de Nemours, E. I., and Company. Phenyldialkylbicyclo-2.2.2-oct-2-ene nitriles. 3,706,780, Cl. 260-465.00f.
Lee, Robert: *See—*
Knuppel, Helmut; Brotzmann, Karl; Fassbinder, Hans-Georg; Savard, Guy; and Lee, Robert, 3,706,549.
Lees, William Arthur: *See—*
Whitworth, Anthony James; Lees, William Arthur; Tung, Stephen Yi-Sun; and Hajto, Ernest Anthony, 3,706,581.
Leibbrand, Bertus; Mertens, Johan J.; Ploeger, Harm A.; Sluijters, Robert; and Van Assendelft, Leendert, to Akzona Incorporated. Process and apparatus for false twisting synthetic yarns. 3,706,192, Cl. 57-34.0hd.
Leland, James M., to United States of America, Navy. Apparatus for electroplating a curved surface. 3,706,651, Cl. 204-218.000.
Lely, C. van der, N.V.: *See—*
Barbot, Claude, 3,706,191.
Lemaitre, Andre Jules Emile: *See—*
Magnard, Pierre Lucien Antoine; and Lemaitre, Andre Jules Emile, 3,706,178.
Leonard, Richard J.: *See—*
Einstman, William J.; Ponzoni, George B.; and Leonard, Richard J., 3,706,572.
Leontaritis, Lambis; Schon, Nikolaus; and Hoffmann, Hans, to Farbenfabriken Bayer Aktiengesellschaft. Process for the pre-treating of metal sheets which are provided with a coating following a forming operation. 3,706,124, Cl. 29-424.000.
Leopoldi, Norbert. Surgical knife. 3,706,106, Cl. 7-14.100.
Lever Brothers Company: *See—*
Barth, Hans; Knausenberger, Martin; Lange, Henner; Menz, Hans-Udo; and Griess, Wilhelm, 3,706,675.
Caverly, Brian Leonard; and Rossell, John Barry, 3,706,576.
Osborne, David Richard Duke, 3,706,799.
Levin, William: *See—*
Fisher, George Myles Cordell; Froehlich, Fritz Edgar; Levin, William; McDowell, Blake, III; and O'Boyle, Leonard Edward, 3,706,850.
Levin, Yehuda: *See—*
Katchalski, Ephraim; Goldstein, Leon; Levin, Yehuda; and Blumberg, Shmaryahu, 3,706,633.
Lewis, Arthur E.: *See—*
Cohen, Jerry J.; and Lewis, Arthur E., 3,706,630.
Lewis, Sheldon N.; and Miller, George Allen, to Rohm and Haas Company. Certain organotin derivatives of 3-hydroxyisothiazole. 3,706,757, Cl. 260-299.000.
Li, Pei-Ching; and Tsang, Paul J., to International Business Machines Corporation. Glass vapor deposition on surfaces of semiconductor elements. 3,706,597, Cl. 117-201.000.
Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Schaffernicht, Klaus; and Schadlich, Gottfried, 3,706,896.
Lichstein, Bernard M.; and Wolf, Cyril, to Allied Chemical Corporation. Conversion of 2,2-bis(fluoroperhalomethyl)-3, 4-difluorooxetene to the corresponding fluoroperhalo-3-methyl-2-butenoyl fluoride. 3,706,795, Cl. 260-544.00f.
Lichtman, Joseph Z., to United States of America, Navy. Vacuum process for application of sheet coatings. 3,706,621, Cl. 156-285.000.
Light, William A.: *See—*
Fox, Charles J.; and Light, William A., 3,706,554.
Lilly, Wallace B. Inflatable safety device. 3,706,462, Cl. 280-150.0ab.
Linarducci, Joseph S.: *See—*
Rapoza, Edward J.; Siegel, Maxwell E.; Estelle, Weems E.; Petrucci, Pasquale M.; Linarducci, Joseph S.; Hamma, John; and Montgomery, John, 3,706,499.
Lindberg, Arne Robert. Method and apparatus for determining colorimetric concentrations. 3,706,497, Cl. 356-188.000.
Linden-Alimak AB: *See—*
Gynt, Lars; and Holm, Lennart, 3,706,285.
Lindholm, James H.: *See—*
Bidell, Frederick W.; Herold, Carl D., Jr.; and Lindholm, James H., 3,706,933.
Lindsey, L. E. Conductor clamp with means for anchoring a conductor stringing assembly thereto. 3,706,436, Cl. 248-63.000.
Lineback, Lynn D.: *See—*
United States of America, National Aeronautics and Space Administration, 3,706,583.
Lingwood, William: *See—*
Moskowitz, Seymour; and Lingwood, William, 3,706,508.
Linton, Richard H.: *See—*
Donofrio, Nicholas M.; and Linton, Richard H., 3,706,891.
Lipkin, Martin. Inflatable safety balloon with inertial means of actuation. 3,706,463, Cl. 280-150.0ab.
Litt, Morton Herbert: *See—*
Anello, Louis Gene; Sweeney, Richard F.; and Litt, Morton Herbert, 3,706,773.
Lloyd, Rodney Frederick; and Cuscurida, Michael, to Jefferson Chemical Company, Inc. Polyurethane polyols. 3,706,714, Cl. 260-77.5ap.
Lockard, Joseph Larue, to AMP Incorporated. Embossed card reader. 3,706,874, Cl. 235-61.11e.
Lockheed Aircraft Corporation: *See—*
Smith, Donald G., 3,706,431.
Turner, Charles J., Jr., 3,706,968.
Logue, Daniel R.: *See—*
Yamada, Yoshikazu; Sund, Joseph Tat-Hin; and Logue, Daniel R., 3,706,276.
Lohmann, Arthur M.; Spurbeck, King; and Burg, Raymond H., to United States of America, Air Force. Abort mechanism. 3,706,282, Cl. 102-76.00r.
Lohr, Raymond J.; and Merl, Carl J., to Marx, Louis & Co., Inc. Toy for simulating vehicle travel. 3,706,159, Cl. 46-240.000.
Lohrenz, Victor: *See—*
Wheeler, Donald J.; and Lohrenz, Victor, 3,706,251.
Long, Erwin L. Method and apparatus for improving bearing strength of piles in permafrost. 3,706,204, Cl. 61-46.000.
Long, Robert C. Tire-removal device. 3,706,335, Cl. 157-1.170.
Longsworth, Ralph C.: *See—*
Kadi, Frank J.; Longsworth, Ralph C.; and Meier, Richard N., 3,706,208.
Loomis, Joseph L.: *See—*
Nicholas, Winslow C.; and Loomis, Joseph L., 3,706,105.
Lootens, William F.; and Flowers, Joseph K., to General Electric Company. Semiconductor device with low impedance bond. 3,706,915, Cl. 317-234.00r.
Lopez, John A., to Shell Oil Company. Traffic paint compositions. 3,706,684, Cl. 260-18.0ep.
Lorain Products Corporation: *See—*
Chambers, Charles W., Jr., 3,706,862.
Lord Corporation: *See—*
Olowinski, Edward J., 3,706,465.
Louth, Howard P.: *See—*
Kicks, John C.; and Louth, Howard P., 3,706,953.
Loveless, Frederick C.; and Miller, Don H., to Uniroyal, Inc. Catalyst and method for making EPDM having improved processability. 3,706,718, Cl. 260-80.780.
Lovich, John W.: *See—*
Sprick, Walter F.; Morse, Frank C.; Holzer, Alexander; Meller, Oscar W.; and Lovich, John W., 3,706,392.
Lucas, Joseph, (Industries) Limited: *See—*
Foley, David, 3,706,866.
Gleeson, Robert Leonard, 3,706,133.
Luebbers, Earl H.; and Kingsley, Bertis N. Fishhook remover. 3,706,154, Cl. 43-53.500.
Lynott, John J., to International Business Machines Corporation. Disk cartridge with rotatably adjustable head. 3,706,857, Cl. 179-100.20t.
Lyon, Jerry: *See—*

Rand, Henry T.; Bohacz, Maxine; Lyon, Jerry; Pitman, Robert L.; Shaw, Donald N.; and Bianchi, John, 3,706,867.

Lyon, John K., to Price-Pfister Brass Mfg., Co. Single handle high volume tub filler. 3,706,324, Cl. 137-625.410.

M & T Chemicals Inc.: *See—*
Gitlitz, Melvin Hyman, 3,706,774.

Mackinnon, Ian Malcolm: *See—*
Hamblyn, Stephen Mark Lesley; Money, Anthony Patrick; Mackinnon, Ian Malcolm; and Trotter, John Edmund, 3,706,652.

Maeda, Shigeo: *See—*
Ozutsumi, Minoru; Maeda, Shigeo; and Nakajyo, Teruo, 3,706,725.

Mageli, Orville Leonard; and D'Angelo, Antonio Joseph, to Pennwalt Corporation. Processes using polyperoxides affording sequential free radical generation. 3,706,818, Cl. 260-885.000.

Maggs, Robert James: *See—*
Joynes, Peter Leonard; and Maggs, Robert James, 3,706,381.

Magic American Chemical Corporation: *See—*
Zeilinger, Alan F., 3,706,397.

Magnard, Pierre Lucien Antoine; and Lemaitre, Andre Jules Emile, to Mead Corporation, The. Machine for the packaging of objects. 3,706,178, Cl. 53-131.000.

Magnavox Company, The: *See—*
Robertson, Gene D., 3,706,842.

Magnuson, John E.: *See—*
Burrows, Clifford G.; Magnuson, John E.; and Giese, Ludi, 3,706,464.

Magnuson, Roland A., to United States of America, Army. Ammunition booster. 3,706,255, Cl. 86-1.000.

Mahlmann, James P.; Coogan, Joseph F., III; and Mazzaferro, Gene Alfred, to General Foods Corporation. Roasting of subdivided coffee beans. 3,706,574, Cl. 99-69.000.

Malatchi, James M. Plural channel light dimming system. 3,706,913, Cl. 315-292.000.

Maltby, Frederick L., to Drexelbrook Controls, Inc. RF system for measuring the level of materials. 3,706,980, Cl. 340-244.00c.

Mann, David A.: *See—*
Argraves, Neil E.; and Mann, David A., 3,706,170.

Mann, Richard S.: *See—*
Moyle, Kenneth J.; and Mann, Richard S., 3,706,840.

Manning, Charles R.: *See—*
United States of America, National Aeronautics and Space Administration, 3,706,583.

Manning, Robert E.: *See—*
Anderson, Paul L.; Houlihan, William J.; and Manning, Robert E., 3,706,744.

Manufacturers Brush Company, The: *See—*
Schofield, Arthur T., 3,706,329.

Mara, Edward A. O.: *See—*
Moxness, James G.; Nelson, Harold H.; and Mara, Edward A. O., 3,706,489.

Marathon Oil Company: *See—*
Davis, John A., Jr., 3,706,659.
Duke, Roy B., Jr., 3,706,811.

Marfey, Peter: *See—*
Tangen, Oddvar; Berman, Herbert J.; and Marfey, Peter, 3,706,661.

Markwick, John P., to Black, H. R., Company. Automatic endless belt type filter. 3,706,378, Cl. 210-107.000.

Marlin Toy Products, Inc.: *See—*
Thornell, Ernest La Verne, 3,706,156.

Martel, Charles Etienne Georges: *See—*
Bouisse, Jean Marie Germain; Martel, Charles Etienne Georges; and Villey-Desmeserets, Franck Pierre Antoine, 3,706,283.

Martin, James. Vehicle ejection seats. 3,706,434, Cl. 244-122.0ad.

Martin, Jerry L., to Truth Incorporated. Check rail lock. 3,706,467, Cl. 292-111.000.

Martin, Preston Kuhn; and Kelly, Richard Howard, to Celanese Corporation. Detergent polyelectrolyte builders. 3,706,672, Cl. 252-156.000.

Martinsons, Aleksandrs, to PPG Industries, Inc. Method of regenerating spinel surfaced electrodes. 3,706,644, Cl. 204-98.000.

Martyny, William C.; Miller, Victor W.; and Olwert, Ronald J., to General Electric Company. Fluorescent lamp having coated inleads. 3,706,895, Cl. 313-42.000.

Marx, Louis & Co., Inc.: *See—*
Lohr, Raymond J.; and Merl, Carl J., 3,706,159.

Marx, Michael; and Fried, John H., to Syntex Corporation. 1,2-Dihydrophenanthrenes. 3,706,781, Cl. 260-468.500.

Masaki, Kenji; and Kato, Sinzo, to Nissan Motor Company, Limited. Carburettor for motor vehicle. 3,706,444, Cl. 261-39.00d.

Maschienefabrik Goebel GmbH: *See—*
Herd, Joseph, 3,706,250.

Maschinenfabrik Hennecke GmbH: *See—*
Kisteneich, Heinz; and Proksa, Ferdinand, 3,706,516.

Maschinenfabrik Stromag G.m.b.H.: *See—*
Bohm, Heinz-Dieter; Muller, Unna Wolfgang; and Hobert, Herbert, 3,706,365.

Masetta, Joseph P., to Xerox Corporation. Variable film reel. 3,706,488, Cl. 353-26.000.

Mask, Charles A.: *See—*
Cosgrove, Richard E.; Krull, Irwin H.; and Mask, Charles A., 3,706,649.

Massey-Ferguson Services, N.V.: *See—*
Crawford, Alexander, 3,706,273.

Matsuo, Masao: *See—*
Usamoto, Teruyoshi; Hatada, Yasutaka; Furuichi, Itsuro; and Matsuo, Masao, 3,706,819.

Matsura, Eiichi, to Kabushiki Kaisha Daini Seikosha. Date correcting device for wrist watches. 3,706,197, Cl. 58-58.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Deguchi, Masahiro; and Hashirano, Masaru, 3,706,425.
Fukunaga, Masao; and Amo, Kiyoyuki, 3,706,135.

Matsuura, Takashi; and Chikanon, Mitsuo, to Hoya Glass Works. Glass color filter for use under daylight color fluorescent light. 3,706,688, Cl. 252-300.000.

Matsuyama, Hirokazu: *See—*
Moroe, Tatsuo; Komatsu, Akira; Akutagawa, Susumu; Sakaguchi, Toshiaki; and Matsuyama, Hirokazu, 3,706,809.

Mattel, Inc.: *See—*
Baeza, Armando M., 3,706,155.
Folson, Henry J.; Boxley, Denis V.; Kingsbury, James; Kraitzer, Shlomo; Soulakis, George; and Whittington, Jimmie L., 3,706,153.

Matter Mfg. Corporation: *See—*
Tucker, Council A., 3,706,184.

Maull, John C.: *See—*
Lapidas, Manuel; and Maull, John C., 3,706,420.

Max, Ruf, to Audi Nsu Auto Union Aktiengesellschaft. Inner seal assembly for rotary mechanisms. 3,706,514, Cl. 418-104.000.

Maxon Pre-Mix Burner Corporation: *See—*
Condon, James A.; and Rothhaar, Charles W., 3,706,438.

Mazzaferro, Gene Alfred: *See—*
Mahlmann, James P.; Coogan, Joseph F., III; and Mazzaferro, Gene Alfred, 3,706,574.

Mc Cann, Joseph A., to General Electric Company. Integrated semiconductor rectifiers and processes for their fabrication. 3,706,129, Cl. 29-580.000.

Mc Neill, Robert M. Gun and projectile for shooting fluids. 3,706,151, Cl. 42-1.00r.

McCoy, Mary Eloise; and Redin, Gunnar Sigurd, to American Cyanamid Company. Use of 4,6-diaminopyrimidine hydrochloride as an antifungal agent. 3,706,833, Cl. 424-251.000.

McDonnell Douglas Corporation: *See—*
Olsen, Larry C.; Seeman, Stephen E.; Griffin, Bobby I.; and Ambrose, Charles J., 3,706,893.
Strier, Murray P.; and Smatko, Joseph S., 3,706,601.

McDougal, Allan R.: *See—*
United States of America, National Aeronautics and Space Administration, 3,706,230.

McDowell, Blake, III: *See—*
Fisher, George Myles Cordell; Froehlich, Fritz Edgar; Levin, William; McDowell, Blake, III; and O'Boyle, Leonard Edward, 3,706,850.

McGhay, Maynard H.: *See—*
Choi, Charles; and McGhay, Maynard H., 3,706,948.

McGraw, Thomas F. Orbiting system simulator. 3,706,141, Cl. 35-45.000.

McGraw-Edison Company: *See—*
Angus, Alexander C., 3,706,852.
Keitel, John C., 3,706,858.
Mikulecky, Harvey W., 3,706,951.

McIntyre, Kevin M. Radiological apparatus for measuring length which comprises two relatively movable radio opaque marks. 3,706,883, Cl. 250-59.000.

McKillip, William J.: *See—*
Hartlage, James A.; and McKillip, William J., 3,706,800.

McKillip, William J.; and Clemens, Lawrence M., to Ashland Oil, Inc. Bisacyl aminimides. 3,706,797, Cl. 260-558.00h.

McKinney, Joel D.: *See—*
Bryson, Millard C.; McKinney, Joel D.; and Murphy, James R., 3,706,654.

McLefferty, George H., to United Aircraft Corporation. Diffraction-compensated mirror for laser amplifier. 3,706,939, Cl. 330-4.300.

McLellan, Ian Alexander: *See—*
Bremner, James Duncan; and McLellan, Ian Alexander, 3,706,826.

McNeil Laboratories, Inc.: *See—*
Plostnieks, Janis, 3,706,749.

Mead Corporation, The: *See—*
Magnard, Pierre Lucien Antoine; and Lemaitre, Andre Jules Emile, 3,706,178.

Meddauh, Michael D.: *See—*
Huebner, David J.; and Meddauh, Michael D., 3,706,695.

Medical Research Laboratories: *See—*
Milani, Dean L.; and Kerwin, Richard G., 3,706,313.

Meeco, Inc.: *See—*
Siegerist, Walter L., 3,706,214.

Meier, Richard N.: *See—*
Kadi, Frank J.; Longsworth, Ralph C.; and Meier, Richard N., 3,706,208.

Meldrum, David R.: *See—*
Eckert, Frank J.; and Meldrum, David R., 3,706,585.

Meldrum, David R.; and Eckert, Frank J., to Cities Service Company. Method of producing a pearlescent basic lead carbonate pigment. 3,706,586, Cl. 106-291.000.

Melges, Frederick J., to Rymel Corporation. Surgical instrument. 3,706,312, Cl. 128-305.000.

Meller, Oscar W.: *See—*
Sprick, Walter F.; Morse, Frank C.; Holzer, Alexander; Meller, Oscar W.; and Lovich, John W., 3,706,392.
Menz, Elsie L. Transfer of images to a non-conductive substrate. 3,706,553, Cl. 96-1.400.
Menz, Hans-Udo: *See—*
Barth, Hans; Knausenberger, Martin; Lange, Henner; Menz, Hans-Udo; and Griess, Wilhelm, 3,706,675.
Merck & Co., Inc.: *See—*
Shen, Tsung-Ying; Witzel, Bruce E.; and Walford, Gordon L., 3,706,792.
Sprague, James M.; and Ziegler, Carl, 3,706,790.
Merdes, Hartmut: *See—*
Berger, Herbert; Gall, Rudi; Merdes, Hartmut; Stach, Kurt; Sauer, Winfriede; and Vomel, Wolfgang, 3,706,745.
Merl, Carl J.: *See—*
Lohr, Raymond J.; and Merl, Carl J., 3,706,159.
Mertens, Johan J.: *See—*
Leibbrand, Bertus; Mertens, Johan J.; Ploeger, Harm A.; Sluijters, Robert; and Van Assendelft, Leendert, 3,706,192.
Mertens, Wolfgang, to Herzer, Kurt, Company. Head rest with energy absorbing head pad, particularly for vehicle seats. 3,706,472, Cl. 297-397.000.
Merz, Edmund H., to Continental Can Company, Inc. One-at-a-time dispenser. 3,706,394, Cl. 221-75.000.
Meyer, Burton C., to Glass, Marvin, & Associates. Maze type game. 3,706,455, Cl. 273-110.000.
Meyer, Donald: *See—*
Middleton, Richard E.; and Meyer, Donald, 3,706,212.
Meyer, Edward. Glass frit-ceramic powder composition. 3,706,582, Cl. 106-39.00r.
Meyer, Hans, to Meyer, Hans, Fabrik Vordruck-Systeme und Organisationsmittel Grossdruckerel und Verlag. Apparatus for separating copying tests. 3,706,405, Cl. 225-9.004.
Meyer, Hans, Fabrik Vordruck-Systeme und Organisationsmittel Grossdruckerel und Verlag: *See—*
Meyer, Hans, 3,706,405.
Meyer Products: *See—*
Miceli, Marc L., 3,706,144.
Miccioli, Aldo R.: *See—*
Hatcher, Burrell R.; Miccioli, Aldo R.; Mohr, Max C.; and Sheldon, Edward J., 3,706,998.
Miceli, Marc L., to Meyer Products. Control means for a snow plow. 3,706,144, Cl. 37-42.000.
Michael, Harold J., to North American Rockwell Corporation. Cermet protective coating. 3,706,579, Cl. 106-1.000.
Michalik, Edmund R., to PPG Industries, Inc. Method of liquid quenching of glass sheets. 3,706,544, Cl. 65-116.000.
Michellone, Giancarlo; and Palazzetti, Mario, to Fiat Societa per Azioni. Hydraulic circuits. 3,706,478, Cl. 303-10.000.
Michishita, Hisakichi: *See—*
Yanagidaira, Hidetaka; Shintani, Sotokichi; and Michishita, Hisakichi, 3,706,945.
Mickelson, Grant A.; Jones, Darryl L.; and Baral, William J., to Union Oil Company of California. Hydrocarbon conversion catalysts. 3,706,693, Cl. 252-435.000.
Micromedic Systems, Inc.: *See—*
Sanz, Manuel Claude; and Weber, Rene, 3,706,233.
Middleton, Richard E.; and Meyer, Donald. Lock mounted with blind fasteners. 3,706,212, Cl. 70-369.000.
Mieczkowski, Robert W. Inlet control. 3,706,271, Cl. 98-41.000.
Mikulecky, Harvey W., to McGraw-Edison Company. Fusible element arrangement for fuse. 3,706,951, Cl. 337-163.000.
Milani, Dean L.; and Kerwin, Richard G., to Medical Research Laboratories. Trapezoidal waveshape defibrillator. 3,706,313, Cl. 128-419.00d.
Milde, Karl F., Jr. Sailboat. 3,706,296, Cl. 114-102.000.
Milgram, Jerome H.: *See—*
Cross, Ralph Herbert, III, 3,706,382.
Miller, Brian S.: *See—*
Caldwell, Larry V.; and Miller, Brian S., 3,706,920.
Miller, Charles Eveleigh, to International Telephone and Telegraph Corporation. Densitometer. 3,706,220, Cl. 73-32.000.
Miller, Don H.: *See—*
Loveless, Frederick C.; and Miller, Don H., 3,706,718.
Miller, George Allen: *See—*
Lewis, Sheldon N.; and Miller, George Allen, 3,706,757.
Miller, George T., to Hooker Chemical Corporation. Fuel cell electrode structure utilizing capillary action. 3,706,602, Cl. 136-120.0fc.
Miller, Victor W.: *See—*
Martyny, William C.; Miller, Victor W.; and Olwert, Ronald J., 3,706,895.
Mills, Ivor W.; Dimeler, Glenn R.; and Kirk, Merritt C., Jr., to Sun Oil Company. Light-colored highly aromatic oil and process of preparation. 3,706,653, Cl. 208-64.000.
Mimmack, William E.: *See—*
Geier, George; and Mimmack, William E., 3,706,496.
Minnesota Mining and Manufacturing Company: *See—*
Moxness, James G.; Nelson, Harold H.; and Mara, Edward A. O., 3,706,489.
Minolta Camera Kabushiki Kaisha: *See—*
Uesugi, Kyozo, 3,706,269.
Mississippi State University Development Foundation, Inc.: *See—*
Ammerman, Gale R., 3,706,333.
Miura, Satoshi: *See—*
Nishiyama, Shigeru; Kusano, Hiroshi; Nagai, Yoshiro; and Miura, Satoshi, 3,706,615.
Miyano, Shizuo; Kido, Keishiro; Kondo, Asaji; and Mizuki, Eiichi, to Fuji Photo Film Co., Ltd. Image-receiving material for transfer images. 3,706,593, Cl. 117-127.000.
Mizuki, Eiichi: *See—*
Miyano, Shizuo; Kido, Keishiro; Kondo, Asaji; and Mizuki, Eiichi, 3,706,593.
Mobil Oil Corporation: *See—*
Anderson, James J.; Byrd, Wendell M., Jr.; and Camacho, Vasco G., 3,706,821.
Etherington, Robert W., Jr.; and Kaeding, Warren W., 3,706,807.
Stournas, Stamoulis; Heiba, El-Ahmadi I.; and Dessau, Ralph M., 3,706,541.
Mogensen, Arne: *See—*
Jedvall, Gustaf I., 3,706,927.
Mohr, John, & Sons: *See—*
Tokarz, Leo T., 3,706,387.
Mohr, Max C.: *See—*
Hatcher, Burrell R.; Miccioli, Aldo R.; Mohr, Max C.; and Sheldon, Edward J., 3,706,998.
Mohri, Kazunori: *See—*
Saiga, Yoshinori; and Mohri, Kazunori, 3,706,343.
Molex Incorporated: *See—*
Krafthefer, Kerry M., 3,706,954.
Monahan, Donald F.: *See—*
Acquadro, Edward W.; and Monahan, Donald F., 3,706,973.
Monarch Marking Systems, Inc.: *See—*
Smith, Thomas M.; and Gregory, Walter D., 3,706,626.
Money, Anthony Patrick: *See—*
Hamblyn, Stephen Mark Lesley; Money, Anthony Patrick; Mackinnon, Ian Malcolm; and Trotter, John Edmund, 3,706,652.
Monfroy, Henri: *See—*
Galves, Jean-Pierre; Monfroy, Henri; and Reboul, Jean-Philippe, 3,706,899.
Monsanto Chemicals Limited: *See—*
Bell, Cyril Ove Robert; and Jones, Neville Murray, 3,706,665.
Monsanto Company: *See—*
Blake, Edward S., 3,706,796.
Coran, Aubert Y.; and Vineyard, Billy D., 3,706,667.
Hacklander, Egon H.; Hirshfeld, Julian J.; and Reuben, Bertie J., 3,706,529.
Katchalski, Ephraim; Goldstein, Leon; Levin, Yehuda; and Blumberg, Shmaryahu, 3,706,633.
Kowalski, Xavier, 3,706,634.
Kowalski, Xavier, 3,706,635.
Thompson, Quentin E., 3,706,664.
Montgomery, John: *See—*
Rapoza, Edward J.; Siegel, Maxwell E.; Estelle, Weems E.; Petrucci, Pasquale M.; Linarducci, Joseph S.; Hamma, John; and Montgomery, John, 3,706,499.
Moon, Malcolm W., to Upjohn Company, The. 1,2-Pyridazinedicarboximidophosphorous insecticides. 3,706,743, Cl. 260-250.00a.
Moore, Edgar E.; and Foster, William A., to Dow Chemical Company, The. Drainage improvement in paper pulp suspensions containing lignin residues. 3,706,629, Cl. 162-168.000.
Moore, Richard L.: *See—*
United States of America, National Aeronautics and Space Administration, 3,706,230.
Moore, Robert S.: *See—*
Kokx, Darrel D.; and Moore, Robert S., 3,706,311.
Moore, Samuel & Company: *See—*
Whitledge, Jon Keyes, 3,706,123.
Moore, William G.: *See—*
Gonzales, Michael; Benton, Richard H.; and Moore, William G., 3,706,457.
Moran, Stephen F.: *See—*
Hancks, Dorothy B.; and Moran, Stephen F., 3,706,293.
Morando, Jorge A.: *See—*
Baniadam, Mahmood; and Morando, Jorge A., 3,706,318.
Mordan, William J., to Hewlett-Packard Company. Sweep hold-off circuit. 3,706,904, Cl. 315-19.000.
Mori, Koziro: *See—*
Okamoto, Tosiaki; Mori, Koziro; Yamazaki, Hayao; Abu, Takao; and Sato, Takefumi, 3,706,971.
Morin, Van, to Astro Music Company, Inc. Guitar servicing tool. 3,706,254, Cl. 84-458.000.
Moroe, Tatsuo; Komatsu, Akira; Akutagawa, Susumu; Sakaguchi, Toshiaki; and Matsuyama, Hirokazu, to Takasago Perfumery Co., Ltd. Process for preparing highly reactive organomagnesium compounds. 3,706,809, Cl. 260-665.00r.
Morse, Frank C.: *See—*
Sprick, Walter F.; Morse, Frank C.; Holzer, Alexander; Meller, Oscar W.; and Lovich, John W., 3,706,392.
Morton-Norwich Products, Inc.: *See—*
Alaimo, Robert J.; and Pelosi, Stanford S., Jr., 3,706,759.
Moskowitz, Seymour; and Lingwood, William, said Moskowitz assor. to Curtiss-Wright Corporation. Transpiration cooled turbine blade with metered coolant flow. 3,706,508, Cl. 415-115.000.
Moss, Keith Graham: *See—*
Pumphrey, Nicholas William James; and Moss, Keith Graham, 3,706,600.
Motorola, Inc.: *See—*
Besier, Emil E.; and Knauer, Warren L., Jr., 3,706,844.

Choi, Charles; and McGhay, Maynard H., 3,706,948.
Petri, Chris A., 3,706,908.
Seelbach, Walter C.; and Lampathakis, Kyriakose, 3,706,130.
Moudry, Gilbert A.: *See—*
Hilton, Ralph W.; and Moudry, Gilbert A., 3,706,118.
Mowrey, Rowland G.; Stephen, Keith H.; and Wolfarth, Eugene F., to Eastman Kodak Company. Compositions for making blixes. 3,706,561, Cl. 96-60.0bf.
Moxness, James G.; Nelson, Harold H.; and Mara, Edward A. O., to Minnesota Mining and Manufacturing Company. Copying and duplicating apparatus. 3,706,489, Cl. 355-3.000.
Moyer, Ronald C.; and Uffner, Melville W., to Air Products and Chemicals, Inc. Functional surface coating compositions for cellulosic material. 3,706,590, Cl. 117-111.00b.
Moyle, Kenneth J.; and Mann, Richard S., to Intersil Incorporated, mesne. Semiconductor device packaging. 3,706,840, Cl. 174-52.0pe.
Mueller, Clair W., to Rex Chainbelt Inc. Method of forming a conveyor chain link having knuckles formed integrally with edge. 3,706,200, Cl. 59-35.000.
Mueller, Johannes: *See—*
Bosshardt, Rolf; Fechtig, Bruno; Mueller, Johannes; Peter, Heinrich; and Bickel, Hans, 3,706,746.
Mueller, Max B.: *See—*
Chandrasekaran, Swayambu; and Mueller, Max B., 3,706,723.
Mueller, Reinhold: *See—*
So, Richard T.; and Mueller, Reinhold, 3,706,966.
Mukai, Minoru: *See—*
Ishida, Hiroshi; and Mukai, Minoru, 3,706,369.
Kaneko, Keiji; Shoji, Kitimaru; and Mukai, Minoru, 3,706,180.
Mulhall, Kenneth George. Heat treatment apparatus for the treatment of sewage and other sludges. 3,706,447, Cl. 263-37.000.
Mullen, John W. Structural module and furniture or other structures formed therefrom. 3,706,473, Cl. 297-456.000.
Muller, Unna Wolfgang: *See—*
Bohm, Heinz-Dieter; Muller, Unna Wolfgang; and Hobert, Herbert, 3,706,365.
Munakata, Tomohiko: *See—*
Nakanishi, Michio; Munakata, Tomohiko; and Setoguchi, Shinro, 3,706,764.
Munnich, Robert F.: *See—*
Robinson, John L.; and Munnich, Robert F., 3,706,929.
Murphey, Carey E., Jr., to Shell Oil Company. Well deviation control system. 3,706,348, Cl. 175-320.000.
Murphy, James R.: *See—*
Bryson, Millard C.; McKinney, Joel D.; and Murphy, James R., 3,706,654.
Murray, Herbert C.: *See—*
Herr, Milton E.; Murray, Herbert C.; and Fonken, Gunther S., 3,706,801.
Musschoot, Albert, to General Kinematics Corporation. Support structure for use with vibratory devices. 3,706,372, Cl. 198-218.000.
Myers, Albert F., to Boise Cascade Corporation. Pinion differential mechanism having internal bias torque. 3,706,239, Cl. 74-715.000.
N-S-W Corporation: *See—*
Wilmeth, Claude H., 3,706,244.
Nabeta, Saburo; Yamada, Yuzo; and Ito, Itsuya, to Daiichi Seiyaku Co., Ltd. Process for preparing 4-cyanocyclohexane carboxylic acid. 3,706,779, Cl. 260-464.000.
Nagae, Tadashi; Oishi, Yasushi; and Hayashi, Jun, to Fuji Photo Film Co., Ltd. Method for preventing color mixing in multiple layer-type reversal color photographic light-sensitive materials. 3,706,556, Cl. 96-22.000.
Nagai, Yoshiro: *See—*
Nishiyama, Shigeru; Kusano, Hiroshi; Nagai, Yoshiro; and Miura, Satoshi, 3,706,615.
Naganuma, Masaaki; and Saito, Kazuyoski, to Nippon Electric Company, Limited. Code translation device. 3,706,984, Cl. 340-347.0dd.
Nagashima, Shinichiro; and Tsuchiya, Kaichi, to Canon Kabushiki Kaisha. Electroconductized organic insulating material. 3,706,551, Cl. 96-1.500.
Nakai, Toshio: *See—*
Hishida, Yukio; Nakai, Toshio; and Kuzuya, Susumu, 3,706,366.
Nakajyo, Teruo: *See—*
Ozutsumi, Minoru; Maeda, Shigeo; and Nakajyo, Teruo, 3,706,725.
Nakamura, Masanobu. Bulging apparatus. 3,706,213, Cl. 72-58.000.
Nakamura, Yashiharu: *See—*
Nakazawa, Yoshiyuki; Sueyoshi, Tohru; Sato, Akira; and Nakamura, Yashiharu, 3,706,570.
Nakanishi, Michio; Munakata, Tomohiko; and Setoguchi, Shinro, to Yoshitomi Pharmaceutical Industries, Ltd. Phenethylaminomethylchromanones and-thicchromanones. 3,706,764, Cl. 260-327.0th.
Nakazawa, Yoshiyuki; Sueyoshi, Tohru; Sato, Akira; and Nakamura, Yashiharu, to Fuji Photo Film Co., Ltd. Spectrally sensitized negative emulsion containing silver halide grains of less than 0.18 micron. 3,706,570, Cl. 96-137.000.
Narda Microwave Corporation, The: *See—*
Hausner, Jerry, 3,706,940.
National Distillers and Chemical Corporation: *See—*
Broering, Leo H.; and Birchall, William R., 3,706,720.
Grinninger, Lowell D., 3,706,721.
Hoyt, John M.; and Koch, Karl, 3,706,716.
National Semiconductor Corporation: *See—*
Hanna, John E., 3,706,937.
National Steel Corporation: *See—*
Saunders, William T., 3,706,292.
Neal, Charles Bailey; and Scott, Benton Boyd, to GTE Sylvania Incorporated. Color image display system employing altered scanning. 3,706,849, Cl. 178-502.00d.
Nederlandse Organistie voor Toegepast-Natuurweten-schappelyk Onderzoek Ten behoeve van Nyverheid: *See—*
Turnhout, Jan Van, 3,706,131.
Neese, John W.; and Gaylor, James E. Apparatus for evacuating septic tanks or the like. 3,706,319, Cl. 137-205.000.
Neff, Joseph J., to Bell & Howell Company. Automatic loading and unloading tape transport apparatus utilizing a captive leader. 3,706,423, Cl. 242-195.000.
Neisch, James C., to North American Rockwell Corporation. Differential control. 3,706,351, Cl. 180-75.000.
Nelson, Alfred R.; and Floria, Vernon D., to Dow Chemical Company, The. Polymers from essentially water-insoluble unsaturated liquid monomers and process for preparing same. 3,706,722, Cl. 260-85.5za.
Nelson, Harold H.: *See—*
Moxness, James G.; Nelson, Harold H.; and Mara, Edward A. O., 3,706,489.
Neuenburg, Henry. Motor-driven chiseling device. 3,706,474, Cl. 299-38.000.
Neuzil, Richard W.: *See—*
De Rosset, Armand J.; and Neuzil, Richard W., 3,706,812.
Neuzil, Richard W., to Universal Oil Products Company. Selectively adsorbing multi-branched paraffins. 3,706,813, Cl. 260-676.0ms.
Newbury, Dale E.; and Prengaman, Raymond David, to St. Joe Minerals Corporation. Superplastic lead alloys. 3,706,605, Cl. 148-11.50r.
Newell, Ronald C. Door stop. 3,706,112, Cl. 16-82.000.
Newro-Data, Inc.: *See—*
John, Erwin Roy; and Laupheimer, Robert, 3,706,308.
Newsbaum, Robert William: *See—*
Kearnan, James Edward; and Newsbaum, Robert William, 3,706,708.
Nichicon Capacitor, Limited: *See—*
Kawakami, Takaya; Kitamura, Toshinori; Ajichi, Yoshio; and Ono, Masayoshi, 3,706,949.
Nicholas, Winslow C.; and Loomis, Joseph L. Portable play platform. 3,706,105, Cl. 5-93.00r.
Nicholson, James O.: *See—*
Bickford, Jerome R.; and Nicholson, James O., 3,706,887.
Nihon Tokushu Noyaku Seizo Kabushiki Kaisha: *See—*
Hirane, Seiichi; Aya, Masahiro; and Kishino, Shigeo, 3,706,832.
Niles, Donald E., to Outboard Marine Corporation. Lawn mower friction drive with slip clutch. 3,706,363, Cl. 192-3.540.
Nippon Electric Company, Limited: *See—*
Naganuma, Masaaki; and Saito, Kazuyoski, 3,706,984.
Saito, Noriaki; and Kadota, Shinsuke, 3,706,853.
Nippon Electronics Co., Ltd.: *See—*
Sugiura, Kaku, 3,706,961.
Nishiba, Tuneo: *See—*
Kato, Mahiko; Saito, Isamu; and Nishiba, Tuneo, 3,706,398.
Nishiyama, Shigeru; Kusano, Hiroshi; Nagai, Yoshiro; and Miura, Satoshi, to Kubota Iron & Machinery Works, Ltd. Composite tube and a method of producing the same using the filament winding process. 3,706,615, Cl. 156-169.000.
Nissan Motor Company, Limited: *See—*
Masaki, Kenji; and Kato, Sinzo, 3,706,444.
Nitz, Rolf-Eberhard: *See—*
Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; Schraven, Eckhard; and Stachel, Adolf, 3,706,739.
Nitzsche, Siegfried; Burkhardt, Jurgen; and Wegehaupt, Karl-Heinrich, to Wacker-Chemie G.m.b.H. Method for preparing organopolysiloxane elastomers. 3,706,591, Cl. 117-124.00f.
Nitzsche, Siegfried; Rurkhardt, Jurgen; and Wegehaupt, Karl-Heinrich, to Wacker-Chemie G.m.b.H. Method of preparing high molecular weight linear organopolysiloxanes. 3,706,775, Cl. 260-448.20e.
Noar, Raymond; Tuffias, Robert H.; and Gow, Kenneth P., to North American Rockwell Corporation. Turbulence and vortex suppression in gyros. 3,706,231, Cl. 74-5.00r.
Nodine, John H. Digital data entry device. 3,706,873, Cl. 235-61.100.
Noll, Charles A. Method for determining zinc concentration in aqueous mediums. 3,706,532, Cl. 23-230.00r.
Nomarski, Georges: *See—*
Roblin, Gerard; and Nomarski, Georges, 3,706,492.
Norden, Alexander R., to O. Z. Electrical Manufacturing Company. Ground connector for conduit. 3,706,959, Cl. 339-14.00r.
Nordstrom, Wallace C.; and Welles, Albert W., to United States of America, Navy. Acoustic target source. 3,706,963, Cl. 340-5.00d.
Norman, Charles R., to Harris-Intertype Corporation. Heated adhesive applicator roll system. 3,706,298, Cl. 118-5.000.
North American Aviation, Inc.: *See—*
Bayle, Guy P.; Smyth, Richard K.; and Gustafson, Robert D., 3,706,988.
North American Rockwell Corporation: *See—*
Budzyna, Joseph M., 3,706,327.
Michael, Harold J., 3,706,579.
Neisch, James C., 3,706,351.
Noar, Raymond; Tuffias, Robert H.; and Gow, Kenneth P., 3,706,231.
Slater, John M.; and Wilcox, Doyle E., 3,706,217.
Northwestern Golf Company: *See—*

Rosasco, Nate, Jr., 3,706,453.

Norton Company: *See—*
Eisner, Steve, 3,706,650.

Notley, Norman T., to Bell & Howell Company. Magnetic imaging methods and apparatus. 3,707,001, Cl. 346-74.omt.

Nott, Robert Edward; and Lander, David Robin, to Imperial Chemical Industries Limited. Method for flow rate control. 3,706,827, Cl. 264-176.000.

Novak, Joseph F. Method and apparatus for converting monochrome pictures to multi-color pictures electronically. 3,706,841, Cl. 178-5.40r.

Nuclear Associates, Inc.: *See—*
Haskins, Arlie W., 3,706,689.

Nye, William M., to Lanier Electronic Laboratory, Inc. Unidirectional tape motion detection apparatus and automatic tape return. 3,706,859, Cl. 179-100.20r.

Nyunoya, Mizuo, to Aisin Seiki Kabushiki Kaisha. Automatic brake adjuster. 3,706,360, Cl. 188-79.50p.

O. Z. Electrical Manufacturing Company: *See—*
Norden, Alexander R., 3,706,959.

Oberhauser, Charles J., to Dynatech Corporation. Agitation method and means. 3,706,443, Cl. 259-72.000.

O'Boyle, Leonard Edward: *See—*
Fisher, George Myles Cordell; Froehlich, Fritz Edgar; Levin, William; McDowell, Blake, III; and O'Boyle, Leonard Edward, 3,706,850.

O'Brien, Thomas Edward, to Owens-Illinois, Inc. High voltage pulser circuit for driving row-column conductor arrays of a gas discharge display capable of being made in integrated circuit form. 3,706,892, Cl. 307-241.000.

O'Connor, John A., to Avco Corporation. Pipe diffuser with auxiliary bleed system. 3,706,510, Cl. 415-145.000.

Ogihara, Shoji: *See—*
Fukuda, Tadanori; Takahashi, Masao; Ogihara, Shoji; and Sekiya, Masato, 3,706,589.

Oglesbee, Edgar C. Reservoir for lubricating pneumatic components. 3,706,355, Cl. 184-7.00r.

Ohtsuka, Noriko: *See—*
Fujisawa, Tamotsu; Ohtsuka, Noriko; Kobori, Takeo; and Tsuchihashi, Genichi, 3,706,805.

Oishi, Yasushi: *See—*
Nagae, Tadashi; Oishi, Yasushi; and Hayashi, Jun, 3,706,556.

Okamoto, Miyoshi: *See—*
Toki, Masamichi; Hikota, Toyohiko; and Okamoto, Miyoshi, 3,706,613.

Okamoto, Tosiaki; Mori, Koziro; Yamazaki, Hayao; Abu, Takao; and Sato, Takefumi, to Aisin Seiki Company Limited and Sharp Corporation. Brake control arrangement. 3,706,971, Cl. 340-52.00b.

O'Keefe, William J., to United States of America, National Aeronautics and Space Administration. Head-up attitude display. 3,706,970, Cl. 340-27.0at.

Oktay, Sevgin; and Schmeckenbecher, Arnold F., to International Business Machines Corporation. Method for forming heat sinks on semiconductor device chips. 3,706,127, Cl. 29-576.000.

Okuhara, Seiichi. Direction indicator for automobile. 3,706,972, Cl. 340-82.000.

O'Leary, James Oscar. Sewing machine multiple thread dispenser. 3,706,402, Cl. 223-106.000.

Oleksiak, Robert E., to Sperry Rand Corporation. Three-dimensional selection technique for variable threshold insulated gate field effect transistor memories. 3,706,976, Cl. 340-173.00r.

Olin Corporation: *See—*
Keith, Norval A., 3,706,246.

Olivetti, Ing., C., & C., S.p.A.: *See—*
Bretti, Franco, 3,706,367.

Olivieri, George, 30% to Rowan, Thomas M. Display device. 3,706,149, Cl. 40-106.220.

Olowinski, Edward J., to Lord Corporation. Elastomeric reflex joint. 3,706,465, Cl. 287-85.00r.

Olschewski, Karl H.: *See—*
Grimm, Werner; Olschewski, Karl H.; and Sack, Rolf E., 3,706,520.

Olsen, Larry C.; Seeman, Stephen E.; Griffin, Bobby I.; and Ambrose, Charles J., to McDonnell Douglas Corporation. Nuclear battery. 3,706,893, Cl. 310-3.00b.

Olson, Roger A.; and Osero, Norman M., to Buckbee-Mears Company. Lamp circuit. 3,706,983, Cl. 340-251.000.

Olthoff, James A.: *See—*
Knell, Harvey A.; Olthoff, James A.; Scoggin, Barry A.; and Smith, Roger M., 3,706,143.

Olwert, Ronald J.: *See—*
Martyny, William C.; Miller, Victor W.; and Olwert, Ronald J., 3,706,895.

Omark Industries, Inc.: *See—*
Skralskis, Edward P., 3,706,359.

Ono, Masayoshi: *See—*
Kawakami, Takaya; Kitamura, Toshinori; Ajichi, Yoshio; and Ono, Masayoshi, 3,706,949.

Osborne, David Richard Duke, to Lever Brothers Company. Naphthyloxysalicylanilides. 3,706,799, Cl. 260-559.00s.

Osero, Norman M.: *See—*
Olson, Roger A.; and Osero, Norman M., 3,706,983.

Osterberg, Arnold Curtis: *See—*
Suffern, Donald Bruce Borders; Osterberg, Arnold Curtis; and Wallo, Kenneth George, 3,706,835.

Outboard Marine Corporation: *See—*
Niles, Donald E., 3,706,363.

Overs, Ronald R. Marine speedometer. 3,706,224, Cl. 73-187.000.

Owen, Alvin L., to Owen, Alvin L., mesne. Security device. 3,706,211, Cl. 70-232.000.

Owen, Alvin L., mesne: *See—*
Owen, Alvin L., 3,706,211.

Owen, Louis L.: *See—*
Duncan, Vernon R.; and Owen, Louis L., 3,706,943.

Owens-Illinois, Inc.: *See—*
Grier, John D.; and Hall, Maclin S., 3,706,552.
O'Brien, Thomas Edward, 3,706,892.

Oxy Metal Finishing Corporation, mesne: *See—*
Plaxton, Elmer H., 3,706,604.

Ozutsumi, Minoru; Maeda, Shigeo; and Nakajyo, Teruo, to Hodogaya Chemical Industry Co., Limited. Basic triazoic disazo dyes. 3,706,725, Cl. 260-157.000.

Pacific Car and Foundry Company: *See—*
Johnson, Robert E., 3,706,470.

Paelian, Owen; Rister, Donald R.; and Kellar, Richard L., to Toroid Corporation. Load cell. 3,706,349, Cl. 177-211.000.

Pahl, Fritz-Wilhelm: *See—*
Keuerleber, Rudi; and Pahl, Fritz-Wilhelm, 3,706,515.

Palazzetti, Mario: *See—*
Michellone, Giancarlo; and Palazzetti, Mario, 3,706,478.

Palma, James R. Fluid separator. 3,706,383, Cl. 210-374.000.

Palmer, Myron D., to International Business Machines Corporation. Process for etching silicon nitride. 3,706,612, Cl. 156-17.000.

Paluck, Robert J., to Texas Instruments, Incorporated. High speed MOS random access memory. 3,706,975, Cl. 340-173.0ff.

Panas, Walter: *See—*
Wheaton, Theodore C., III.; and Panas, Walter, 3,706,517.

Papaioannou, Christos George. Process for preparing 2,4,6-tris (tert alkylamino-s-triazines. 3,706,741, Cl. 260-249.600.

Paraskos, John A.; and Somers, Allen E., to Gulf Research & Development Company. Hydrodesulfurization of crude and residual oils at reduced space velocity. 3,706,657, Cl. 208-216.000.

Paredes, Candelario, to Forney Engineering Company. Airport ground aircraft automatic taxi route selecting and traffic control system. 3,706,969, Cl. 340-26.000.

Parke, Davis & Company: *See—*
Kaltenbronn, James S., 3,706,767.

Parlato, Joseph. Simulated baseball game. 3,706,454, Cl. 273-89.000.

Parsons, Norman C.: *See—*
Rampy, Gordon A.; Parsons, Norman C.; and Ryder, Mabel H., 3,706,823.

Patel, Natu R., to Gulf Research & Development Company. Combating weeds with thienyl thiocyanates. 3,706,547, Cl. 71-90.000.

Patrick, Keith H., to Ring Around Products, Inc. Liquid spraying method and apparatus. 3,706,417, Cl. 239-222.000.

Patrick, Robert L.; and Richard, Patrick L., to International Business Machines Corporation. Interface multiplexer. 3,706,974, Cl. 340-172.500.

Patterson, Roger Lee; and Isachsen, Henning, to Deere & Company. Tool mounting means for agricultural implements. 3,706,345, Cl. 172-572.000.

Paulssen, Walter A.; and Johnston, Robert R., to Dresser Industries, Inc. Safety brake. 3,706,361, Cl. 188-189.000.

Paultukinis, Richard S. Simple control valves. 3,706,325, Cl. 137-625.660.

Paviak, Stanley C.: *See—*
Franke, Norman W.; Paviak, Stanley C.; and Porter, Warren K., Jr., 3,706,676.

Peacher, Teddy J., to United States of America, Army. Automatic beam scanning apparatus for evaluating optical beacons. 3,706,498, Cl. 356-121.000.

Peat, Robert W., to Butler Manufacturing Company. Mobile feed mixer and bunk loader. 3,706,442, Cl. 259-41.000.

Pecherer, Benjamin: *See—*
Batcho, Andrew David; Berger, Julius; Furlenmeier, Andre; Keller, Oscar; Pecherer, Benjamin; Schocher, Arno Johannes; Spiegelberg, Hans; and Vaterlaus, Bruno Peter, 3,706,729.

Pell, Lawrence W.: *See—*
Voigt, H. William, Jr.; Pell, Lawrence W.; and Picard, Jean P., 3,706,609.

Pelofsky, Arnold H.: *See—*
Herbert, Hugh P.; and Pelofsky, Arnold H., 3,706,648.

Pelorix Corporation: *See—*
Curtis, George L.; Riesenberg, James H.; and Kelly, Ralph E., 3,706,393.

Pelosi, Stanford S., Jr.: *See—*
Alaimo, Robert J.; and Pelosi, Stanford S., Jr., 3,706,759.

Pem-Ims Inc.: *See—*
Smith, Joseph F., 3,706,194.

Penfield, Scott R., Jr., to Combustion Engineering Inc. Intergral economizer for U-tube generator. 3,706,301, Cl. 122-32.000.

Penick & Ford Limited: *See—*
Hjermstad, Erling T.; and Rajtora, Otto J., 3,706,730.

Pennington, John Stanley, to British Steel Corporation. Metallic cage structure and apparatus for manufacturing same. 3,706,331, Cl. 140-112.000.

Pennstar Company: *See—*
Pilish, Andre, 3,706,168.

Pennwalt Corporation: *See—*
Bafford, Richard Anthony, 3,706,783.

Hager, Robert Bonner, 3,706,787.
Mageli, Orville Leonard; and D'Angelo, Antonio Joseph, 3,706,818.

Pere, Gerard, to Creusot-Loire. Device for driving a rotary element capable of deformation and of displacement parallel to its theoretical axis of rotation. 3,706,237, Cl. 74-410.000.

Perry, Ernest John: *See—*
Hollister, Kenneth Robert; Perry, Ernest John; and Dappen, Glen Marshall, 3,706,564.

Persson, Leif Ramon, to A B Billingsfors-Langed. Method of manufacturing a fabric-like material. 3,706,618, Cl. 156-179.000.

Peter, Heinrich: *See—*
Bosshardt, Rolf; Fechtig, Bruno; Mueller, Johannes; Peter, Heinrich; and Bickel, Hans, 3,706,746.

Peterli, Hans Jakob: *See—*
Kirchmayr, Audolph; Peterli, Hans Jakob; and Heller, Hansjarg, 3,706,700.

Petersen, John Valdemar Brammer; and Clauson-Kaas, Niels, to Ciba-Geigy Corporation. Process for the preparation of 2-amino-3-pyridinol. 3,706,753, Cl. 260-296.00r.

Petersen, John Valdemar Brammer; and Clauson-Kaas, Niels, to Ciba-Geigy Corporation. Method for preparing 2,3-pyridinediol. 3,706,754, Cl. 260-297.00r.

Peterson, Adolphe C. Generating systems and methods. 3,706,288, Cl. 110-10.000.

Peterson, Carl L., to GTE Sylvania Incorporated. High pressure electric discharge lamp. 3,706,898, Cl. 313-197.000.

Peterson, Oliver H., to Salsbury Laboratories. Method of controlling odor. 3,706,663, Cl. 210-64.000.

Petit, Gerard; and Bricard, Pierre, to Centre National d'Etudes Spaliales. Sampling methods and devices, more particularly for analog-digital conversions. 3,706,986, Cl. 340-347.0ad.

Petri, Chris A., to Motorola, Inc. Horizontal deflection control means. 3,706,908, Cl. 315-27.0sr.

Petrie, Andrew, to United States of America, Army. Directional ion anemometer. 3,706,938, Cl. 324-33.000.

Petrucci, Pasquale M.: *See—*
Rapoza, Edward J.; Siegel, Maxwell E.; Estelle, Weems E.; Petrucci, Pasquale M.; Linarducci, Joseph S.; Hamma, John; and Montgomery, John, 3,706,499.

Petry, Stanton H.: *See—*
Duve, John P.; and Petry, Stanton H., 3,706,690.

Pfister, Rudolf: *See—*
Sallmann, Alfred; and Pfister, Rudolf, 3,706,735.

Pfizer Inc.: *See—*
De. Angelis, Gerald George; and Hess, Hans-Jurgen Ernst, 3,706,747.

Philco Ford Corporation: *See—*
Wolfe, Paul G., 3,706,907.

Philco-Ford Corporation: *See—*
Robinson, John L.; and Munnich, Robert F., 3,706,929.

Phillips, Michael; and Jurow, Victor A., to Dreyfus, L. A., Company. Resin crusher. 3,706,419, Cl. 241-220.000.

Pic-Air Inc.: *See—*
Picker, Franck M., 3,706,337.

Picard, Jean P.: *See—*
Bobinski, Jack; and Picard, Jean P., 3,706,280.
Voigt, H. William, Jr.; Pell, Lawrence W.; and Picard, Jean P., 3,706,609.

Picker, Franck M., to Pic-Air Inc. Force-balanced die casting apparatus. 3,706,337, Cl. 164-303.000.

Pickles, Joseph, to Ferro Manufacturing Corporation. Window regulator. 3,706,163, Cl. 49-362.000.

Pickles, Joseph, to Ferro Manufacturing Corporation. Tailgate window regulator. 3,706,236, Cl. 74-89.110.

Pierce, John H.: *See—*
King, Charles S. W.; and Pierce, John H., 3,706,407.

Pilish, Andre, to Pennstar Company. Prefabricated buildings. 3,706,168, Cl. 52-234.000.

Pitman, Robert L.: *See—*
Rand, Henry T.; Bohacz, Maxine; Lyon, Jerry; Pitman, Robert L.; Shaw, Donald N.; and Bianchi, John, 3,706,867.

Pitney-Bowes, Inc.: *See—*
Coville, William W., 3,706,274.

Pitroda, Satyan G.; and Rekiere, Bernard J., to GTE Automatic Electric Laboratories Incorporated. Generator for digital pulse signal representative of analog signal pairs. 3,706,855, Cl. 179-18.0es.

Pittman, Allen G.: *See—*
Wasley, William L.; and Pittman, Allen G., 3,706,594.

Plasser, Franz; and Theurer, Josef. Track working apparatus with laser beam reference. 3,706,284, Cl. 104-7.00b.

Plastino, Ario. Head protecting headwear. 3,706,101, Cl. 2-3.00r.

Plati, John Thomas: *See—*
Albrecht, Harry Allen; and Plati, John Thomas, 3,706,761.

Plaxton, Elmer H., to Oxy Metal Finishing Corporation, mesne. Process for the coating of metal. 3,706,604, Cl. 148-6.160.

Plessey Handel und Investments A.G.: *See—*
Grundy, Brian; and Hampson, Peter Samuel, 3,706,856.

Ploeger, Harm A.: *See—*
Leibbrand, Bertus; Mertens, Johan J.; Ploeger, Harm A.; Sluijters, Robert; and Van Assendelft, Leendert, 3,706,192.

Plostnieks, Janis, to McNeil Laboratories, Inc. N-acyl carbostyrils. 3,706,749, Cl. 260-287.00r.

Plotnikoff, Nicholas Peter; Dren, Anthony Thomas; and Jochimsen, William George, to Abbott Laboratories. Method for treatment of drug addiction. 3,706,831, Cl. 424-153.000.

Pneumatic Scale Corporation: *See—*
Sterling, Walter S., 3,706,368.

Polaroid Corporation: *See—*
Arond, Lester H., 3,706,557.

Poloron Products of Indiana, Inc.: *See—*
Quiram, Ronald G., 3,706,188.

Ponzoni, George B.: *See—*
Einstman, William J.; Ponzoni, George B.; and Leonard, Richard J., 3,706,572.

Popham, Orville G. Paper towel rack. 3,706,421, Cl. 242-55.200.

Porter, Frank K., Jr.; and Sonjara, Boris, to United States of America, Army. Elapsed time indicator. 3,706,865, Cl. 200-83.00t.

Porter, Robert B.: *See—*
Taylor, Lawrence B.; Bentz, Raymond L.; and Porter, Robert B., 3,706,535.

Porter, Warren K., Jr.: *See—*
Franke, Norman W.; Paviak, Stanley C.; and Porter, Warren K., Jr., 3,706,676.

Potts, John D.: *See—*
Kirsch, Francis William; Barmby, David S.; and Potts, John D., 3,706,814.

PPG Industries: *See—*
Erikson, J. A.; and Douds, Robert G., 3,706,709.

PPG Industries, Inc.: *See—*
Martinsons, Aleksandrs, 3,706,644.
Michalik, Edmund R., 3,706,544.

Prahl, Marvin E., to International Business Machines Corporation. Container with brake for enclosed reel. 3,706,426, Cl. 242-198.000.

Prengaman, Raymond David: *See—*
Newbury, Dale E.; and Prengaman, Raymond David, 3,706,605.

Price-Pfister Brass Mfg., Co.: *See—*
Lyon, John K., 3,706,324.

Prince, Paul R.: *See—*
Hansen, Jay M.; Holscher, Donald J.; and Prince, Paul R., 3,706,903.

Prinz, Roy H., to Celanese Corporation. Recovery of polyhydric alkanols and metal salts of alkanoic acids. 3,706,793, Cl. 260-542.000.

Procter & Gamble Company, the: *See—*
Hardy, Frederick Edward, 3,706,671.
Kokx, Darrel D.; and Moore, Robert S., 3,706,311.

Proksa, Ferdinand: *See—*
Kisteneich, Heinz; and Proksa, Ferdinand, 3,706,516.

Ptacek, James F., to Vendo Company, The. Currency testing system. 3,706,374, Cl. 209-75.000.

Pucci, Luigi: *See—*
Epifani, Corrado; and Pucci, Luigi, 3,706,956.

Pullman Incorporated: *See—*
Anderson, C. H.; and Griffiths, Colin, 3,706,449.

Pumphrey, Nicholas William James; and Moss, Keith Graham, to Imperial Chemical Industries Limited. Stripping of coated titanium electrodes for re-coating. 3,706,600, Cl. 134-3.000.

Purdue Research Foundation: *See—*
Bachman, Gustave Bryant; and Eisenstein, Stephen E., 3,706,808.

Pye Limited: *See—*
Joynes, Peter Leonard; and Maggs, Robert James, 3,706,381.

Quaal, John A.: *See—*
Halbeck, Werner B.; Quaal, John A.; Robbins, Clyde F.; Rutchik, Walter L.; and Ryczek, Lawrence J., 3,706,916.

Quam, Myron G.: *See—*
Wald, Milton M.; and Quam, Myron G., 3,706,817.

Questor Corporation: *See—*
Langieri, Michael, Jr.; and Watts, Lennox, 3,706,876.

Quiram, Ronald G., to Poloron Products of Indiana, Inc. Elevating apparatus for tractor attachments. 3,706,188, Cl. 56-11.600.

Rabadeux, Andre: *See—*
Tocquec, Yves; and Rabadeux, Andre, 3,706,999.

Racine Railroad Products, Inc.: *See—*
Stougaard, Chris, 3,706,505.

Radford, James E., to United States of America, Navy. Torpedo recovery system. 3,706,294, Cl. 114-20.00r.

Rain Jet Corporation: *See—*
Hruby, John O., Jr., 3,706,415.

Rajtora, Otto J.: *See—*
Hjermstad, Erling T.; and Rajtora, Otto J., 3,706,730.

Rampy, Gordon A.; Parsons, Norman C.; and Ryder, Mabel H., to FMC Corporation. Purification of alkaryl phosphates. 3,706,823, Cl. 260-990.000.

Ramuz, Henri: *See—*
Edenhofer, Albrecht; Ramuz, Henri; and Spiegelberg, Hans, 3,706,755.

Rand, Henry T.; Bohacz, Maxine; Lyon, Jerry; Pitman, Robert L.; Shaw, Donald N.; and Bianchi, John, to United States of America, Army. Electronic anti-intrusion device. 3,706,867, Cl. 200-61.520.

Rank Organisation Limited, The: *See—*
Fawcett, John Anthony; and Gray, William Hugh, 3,706,485.

Rapoza, Edward J.; Siegel, Maxwell E.; Estelle, Weems E.; Petrucci, Pasquale M.; Linarducci, Joseph S.; Hamma, John; and Montgomery, John, to Becton, Dickinson and Company. Blood test system. 3,706,499, Cl. 356-184.000.

Rapp, Adolph Karl; and Bharali, Utpalananda, to RCA Corporation. Multiple-phase logic circuits. 3,706,889, Cl. 307-205.000.

Raue, Emil J., to United States of America, Army. Precision automatic weighing system. 3,706,375, Cl. 209-121.000.

Rausing, Gad Anders, to Ladco Enterprises Limited. Cartridge belt. 3,706,260, Cl. 89-35.00r.

Ray, Manuel. Support assembly for the louver of jalousie windows. 3,706,165, Cl. 49-403.000.

Raytheon Company: *See—*
Bickford, William J.; and Cease, Richard G., 3,706,946.
Engelhardt, Bjorn H., 3,706,925.
Foreman, Robert J., 3,706,910.
Hapgood, William H., 3,706,303.
Hatcher, Burrell R.; Miccioli, Aldo R.; Mohr, Max C.; and Sheldon, Edward J., 3,706,998.
Helgeson, Peter L.; and Egervary, Tibor I., 3,706,302.
Jedrychowski, Jerzy L.; and Robinson, Peter, 3,706,947.

RCA Corporation: *See—*
Frey, Harry Robert, 3,706,558.
Giel, Geroge James, 3,706,861.
Heyman, Philip Michael; and Gorog, Istvan, 3,706,845.
Rapp, Adolph Karl; and Bharali, Utpalananda, 3,706,889.
Weaver, Harry Zane, 3,706,132.

Reboul, Jean-Philippe: *See—*
Galves, Jean-Pierre; Monfroy, Henri; and Reboul, Jean-Philippe, 3,706,899.

Redford, David Arthur, to Canadian Fina Oil Limited. Process for developing interwell communication in a tar sand. 3,706,341, Cl. 166-275.000.

Redin, Gunnar Sigurd: *See—*
McCoy, Mary Eloise; and Redin, Gunnar Sigurd, 3,706,833.

Redmann, Jerome J., to International Telephone and Telegraph Corporation. Ranging and aiming system. 3,706,493, Cl. 356-4.000.

Reeg, Cloyd P.: *See—*
Hass, Robert H.; and Reeg, Cloyd P., 3,706,658.

Reger, Jo L.: *See—*
Kirkpatrick, Milton E.; Reger, Jo L.; and Staudhammer, Karl P., 3,706,614.

Rehau Plastiks of Canada Limited: *See—*
Soethje, Guenter, 3,706,519.

Reines, Scott A., to United States of America, Navy. Fluorodiglycidyl ethers. 3,706,772, Cl. 260-348.00r.

Rekiere, Bernard J.: *See—*
Pitroda, Satyan G.; and Rekiere, Bernard J., 3,706,855.

Renna, Nicholas, Jr., to United States of America, Navy. Underwater acoustic projector. 3,706,967, Cl. 340-10.000.

Rensch, Eberhard G. Building-frame structure. 3,706,169, Cl. 52-263.000.

Resag, Klaus: *See—*
Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; Schraven, Eckhard; and Stachel, Adolf, 3,706,739.

Reuben, Bertie J.: *See—*
Hacklander, Egon H.; Hirshfeld, Julian J.; and Reuben, Bertie J., 3,706,529.

Rex Chainbelt Inc.: *See—*
Mueller, Clair W., 3,706,200.

Reyner, Franklin W.: *See—*
Hanener, John W.; and Reyner, Franklin W., 3,706,395.

Rhees, Raymond C.: *See—*
Gibson, Fred D., Jr.; Rhees, Raymond C.; Gilson, James I.; and Halker, Bruce B., 3,706,646.

Rheiner Maschinenfabrik Windhoff Akt.-Ges.: *See—*
Bucksch, Herbert; and Koch, Helmut, 3,706,145.

Rhewum Rheinische Werkzeug-u. Maschinenfabrik, G.m.b.H.: *See—*
Krause, Rudolf J., 3,706,376.

Rhodes, Michael S.: *See—*
Kremers, Frank J.; and Rhodes, Michael S., 3,706,771.

Ricaud, Pierre; and Cynober, Simon, to Jeumont-Schneider. Conveyor systems. 3,706,286, Cl. 104-172.00s.

Richard, Patrick L.: *See—*
Patrick, Robert L.; and Richard, Patrick L., 3,706,974.

Richards Manufacturing Company: *See—*
Garnett, Robert E., 3,706,310.

Riesenberg, James H.: *See—*
Curtis, George L.; Riesenberg, James H.; and Kelly, Ralph E., 3,706,393.

Ring Around Products, Inc.: *See—*
Patrick, Keith H., 3,706,417.

Rinker, William R., to Goodrich, B. F., Company, The. Apparatus for making plastic hose. 3,706,624, Cl. 156-432.000.

Rister, Donald R.: *See—*
Paelian, Owen; Rister, Donald R.; and Kellar, Richard L., 3,706,349.

Robbins, Clyde F.: *See—*
Halbeck, Werner B.; Quaal, John A.; Robbins, Clyde F.; Rutchik, Walter L.; and Ryczek, Lawrence J., 3,706,916.

Roberts, Paul G.: *See—*
Borneman, Karl J.; Byler, Eichard E.; Roberts, Paul G.; and Smalinskas, Stepas, 3,706,240.

Roberts, Reginald F.: *See—*
Blanchard, Robert R.; Kennedy, James S.; and Roberts, Reginald F., 3,706,724.

Robertson, Alexander, to General Instrument Corporation. Preset tuner with improved tuning linkage. 3,706,232, Cl. 74-10.600.

Robertson, Gene D., to Magnavox Company, The. Method to double transmission speed of telephone network facsimile. 3,706,842, Cl. 178-6.000.

Robinette, Hillary, Jr., to Robinette Research Laboratories, Inc. Surface active sulfonates and process of preparing same by the reaction of alpha olefin and bisulfite. 3,706,791, Cl. 260-513.00b.

Robinette Research Laboratories, Inc.: *See—*
Robinette, Hillary, Jr., 3,706,791.

Robinson, John L.; and Munnich, Robert F., to Philco-Ford Corporation. Combined modem and vocoder pipeline processor. 3,706,929, Cl. 325-15.000.

Robinson, Peter: *See—*
Jedrychowski, Jerzy L.; and Robinson, Peter, 3,706,947.

Robinson, Robert W., to Sperry Rand Corporation. Apparatus for linearizing a non-linear signal. 3,706,934, Cl. 328-1.000.

Roblin, Gerard; and Nomarski, Georges, to Agence Nationale de Valorisation de la Recherch (ANVAR). Photoelectric system and method for detecting the longitudinal location of surfaces. 3,706,492, Cl. 356-5.000.

Rodriguez, Herman Robert; and deStevens, George, to Ciba-Geigy Corporation. 2,4-benzodiazepines used as antihypertensive agents. 3,706,830, Cl. 424-244.000.

Rohm and Haas Company: *See—*
Lewis, Sheldon N.; and Miller, George Allen, 3,706,757.

Rolls-Royce Limited: *See—*
Britt, Jack, 3,706,509.

Rosasco, Nate, Jr., to Northwestern Golf Company. Golf club with finger orientating grip. 3,706,453, Cl. 273-81.400.

Rosen, Jacob J.: *See—*
Brightmire, Glenn K.; Bossler, Alfred T.; Burnell, Arthur E.; and Helms, August R., 3,706,330.

Rosen, Melvin Harris; and Blatter, Herbert Morton, to Ciba-Geigy Corporation. Thiophene-1,1-dioxides. 3,706,769, Cl. 260-332.100.

Rosen, Philip J., to Diamond Power Specialty Corporation. Reactor control including individual and group rod motor controls. 3,706,921, Cl. 318-564.000.

Rosenberg, Susan M. W.: *See—*
Witherow, William W., 3,706,871.

Rosenfeld, Daniel D.; and Rosenhouse, Stanley. Substituted uracil phosphates as pesticides. 3,706,748, Cl. 260-260.000.

Rosenhouse, Stanley: *See—*
Rosenfeld, Daniel D.; and Rosenhouse, Stanley, 3,706,748.

Ross, Howard C., to Kinkead Industries, Inc. Tail block for carpet stretching tool. 3,706,440, Cl. 254-62.000.

Ross, Roger J., to Singer Company, The. Incremental pattern control system for sewing machines. 3,706,291, Cl. 112-77.000.

Rossell, John Barry: *See—*
Caverly, Brian Leonard; and Rossell, John Barry, 3,706,576.

Rothhaar, Charles W.: *See—*
Condon, James A.; and Rothhaar, Charles W., 3,706,438.

Rouet, Paul, to Ateliers de Constructions Electriques de Charleroi (ACEC) Societe Anonyme. Optical system for a camera. 3,706,848, Cl. 178-7.920.

Rowan, Thomas M.: *See—*
Olivieri, George, 3,706,149.

Rowley, Edward Kenneth: *See—*
Jones, Elwyn David; and Rowley, Edward Kenneth, 3,706,625.

Royal Industries, Inc.: *See—*
Adler, Jason A., 3,706,924.

Rucharski, Thaddeus W.: *See—*
Borel, Robert J.; Corey, Leonard S.; Rucharski, Thaddeus W.; Stocking, John L.; and Thomas, Frederick H., 3,706,406.

Rudzki, Henryk S. Urethane foam production and catalyst therefor comprising a mixture of an aliphatic tertiary amine compound and a tertiary amine salt of an alkylarylsulforic acid. 3,706,687, Cl. 260-2.5ac.

Rueger, Herman: *See—*
Sweeney, Joseph Patrick; and Rueger, Herman, 3,706,134.

Rumanowski, Edmund J., to Tenneco Chemicals Inc. N-cycloalkyl-2, 3,6-trichlorobenzylidene-imines and their use as herbicides. 3,706,548, Cl. 71-121.000.

Rurkhardt, Jurgen: *See—*
Nitzsche, Siegfried; Rurkhardt, Jurgen; and Wegehaupt, Karl-Heinrich, 3,706,775.

Rush, Donald J., to Butler Manufacturing Company. Method of adhering urethane foams. 3,706,622, Cl. 156-306.000.

Rutchik, Walter L.: *See—*
Halbeck, Werner B.; Quaal, John A.; Robbins, Clyde F.; Rutchik, Walter L.; and Ryczek, Lawrence J., 3,706,916.

Rutherford, Harry T. Safety mower and leaf harvester-mulcher. 3,706,189, Cl. 56-13.400.

Ryczek, Lawrence J.: *See—*
Halbeck, Werner B.; Quaal, John A.; Robbins, Clyde F.; Rutchik, Walter L.; and Ryczek, Lawrence J., 3,706,916.

Ryder, Mabel H.: *See—*
Rampy, Gordon A.; Parsons, Norman C.; and Ryder, Mabel H., 3,706,823.

Rymel Corporation: *See—*
Melges, Frederick J., 3,706,312.

Rys, Tadeusz J., to Square D Company. Arc chute. 3,706,868, Cl. 200-144.00r.

S & C Electric Company: *See—*
Harner, Robert H., 3,706,930.

Sack, Rolf E.: *See—*
Grimm, Werner; Olschewski, Karl H.; and Sack, Rolf E., 3,706,520.

Sagami Chemical Research Center: *See—*

Fujisawa, Tamotsu; Ohtsuka, Noriko; Kobori, Takeo; and Tsuchihashi, Genichi, 3,706,805.
Saiag S.p.A. Industria Articoli Gomma: *See—*
Azzola, Roberto, 3,706,628.
Saiga, Yoshinori; and Mohri, Kazunori, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Stave cooling device employing double-tubes. 3,706,343, Cl. 165-70.000.
Saito, Isamu: *See—*
Kato, Mahiko; Saito, Isamu; and Nishiba, Tuneo, 3,706,398.
Saito, Kazuyoski: *See—*
Naganuma, Masaaki; and Saito, Kazuyoski, 3,706,984.
Saito, Noriaki; and Kadota, Shinsuke, to Nippon Electric Company, Limited. Time division communication apparatus. 3,706,853, Cl. 179-15.0al.
Sakaguchi, Toshiaki: *See—*
Moroe, Tatsuo; Komatsu, Akira; Akutagawa, Susumu; Sakaguchi, Toshiaki; and Matsuyama, Hirokazu, 3,706,809.
Sakamoto, Eiichi: *See—*
Ushiyama, Rintaro; Sugino, Osakazu; Sato, Shui; Sakamoto, Eiichi; Yamada, Hiroshi; and Kikuchi, Shoji, 3,706,563.
Saleeba, Wallace: *See—*
Argraves, Neil E.; and Mann, David A. (said Neil & Argraves assor. to), 3,706,170.
Salle, Robert; Sillion, Bernard; and De Gaudemaris, Gabriel, to Institut Francais du Petrole des Carburants Lubrifiants. Bis (phenoxybenzoyl) aromatic compounds. 3,706,803, Cl. 260-591.000.
Sallmann, Alfred; and Pfister, Rudolf, to Ciba-Geigy Corporation. Basic derivatives of 5H-dibenz [b,f] azepines. 3,706,735, Cl. 260-239.00d.
Salsbury Laboratories: *See—*
Peterson, Oliver H., 3,706,663.
Salter, Frank Michael; and Dibley, John Edwin, to British Iron and Steel Research Association, The. Skids or beams for furnaces. 3,706,448, Cl. 266-1.00r.
Sanders Associates, Inc.: *See—*
Hayner, Paul F.; and Eldridge, David G., 3,706,323.
Sandoz Ltd.: *See—*
Baumann, Hans-Peter; and Keller, Robert Christian, 3,706,530.
Sandoz-Wander, Inc.: *See—*
Anderson, Paul L.; Houlihan, William J.; and Manning, Robert E., 3,706,744.
Sanz, Manuel Claude; and Weber, Rene, to Micromedic Systems, Inc. Eccentric mechanism for converting a rotary movement into a reciprocating pectilinear movement of variable amplitude. 3,706,233, Cl. 74-25.000.
Sargent, Ray. Anti-pollution apparatus. 3,706,182, Cl. 55-124.000.
Sato, Akira: *See—*
Nakazawa, Yoshiyuki; Sueyoshi, Tohru; Sato, Akira; and Nakamura, Yashiharu, 3,706,570.
Sato, Shui: *See—*
Ushiyama, Rintaro; Sugino, Osakazu; Sato, Shui; Sakamoto, Eiichi; Yamada, Hiroshi; and Kikuchi, Shoji, 3,706,563.
Sato, Takefumi: *See—*
Okamoto, Tosiaki; Mori, Koziro; Yamazaki, Hayao; Abu, Takao; and Sato, Takefumi, 3,706,971.
Sauder Industries, Inc.: *See—*
Sauder, Robert A.; and Kendrick, Gary R., 3,706,870.
Sauder, Robert A.; and Kendrick, Gary R., to Sauder Industries, Inc. Method and apparatus for stud welding. 3,706,870, Cl. 219-98.000.
Sauer, Thomas H.: *See—*
United States of America, National Aeronautics and Space Administration, 3,706,221.
Sauer, Winfriede: *See—*
Berger, Herbert; Gall, Rudi; Merdes, Hartmut; Stach, Kurt; Sauer, Winfriede; and Vomel, Wolfgang, 3,706,745.
Saunders, William T., to National Steel Corporation. Manufacture of metal containers with rimmed opening. 3,706,292, Cl. 113-1.00g.
Savard, Guy: *See—*
Knuppel, Helmut; Brotzmann, Karl; Fassbinder, Hans-Georg; Savard, Guy; and Lee, Robert, 3,706,549.
Schadlich, Gottfried: *See—*
Schaffernicht, Klaus; and Schadlich, Gottfried, 3,706,896.
Schaffel, Martin: *See—*
Aasen, T. F.; Hartman, Thomas E.; and Schaffel, Martin, 3,706,490.
Schaffernicht, Klaus; and Schadlich, Gottfried, to Licentia Patent-Verwaltungs-G.m.b.H. Cathode-ray tube having planar grid accelerator adjacent and on screen side of beam deflectors. 3,706,896, Cl. 313-78.000.
Schaffner Manufacturing Co., Inc.: *See—*
Schaffner, Robert D., 3,706,167.
Schaffner, Robert D., to Schaffner Manufacturing Co., Inc. Finishing apparatus. 3,706,167, Cl. 51-334.000.
Schelle, Axel; and Baronnet, Pierre, to Knorr-Bremse KG. Line coupling for railway vehicles. 3,706,386, Cl. 213-76.000.
Schellenbaum, Max; and Duennenberger, Max, to Ciba-Geigy Corporation. Method for combating bacteria certain 2-(2'- hydroxyphenyl)-oxazoles. 3,706,834, Cl. 424-272.000.
Schindler, Claude, to Zyma S.A. Distributor apparatus. 3,706,400, Cl. 222-95.000.
Schlumberger Technology Corporation: *See—*
Schuster, Nick A., 3,706,340.
Schmeckenbecher, Arnold F.: *See—*
Oktay, Sevgin; and Schmeckenbecher, Arnold F., 3,706,127.
Schmidt, Paul; Eichenberger, Kurt; and Schweizer, Ernst, to Ciba-Geigy Corporation. 5,6-Dihydro-8H-thiopyrano [4',3':4,5] thieno [2,3-a] pyrimidines. 3,706,738, Cl. 260-247.100.
Schneider, Jos., & Co. Optische Werke Kreuznach: *See—*
Eberhardt, Toni, 3,706,437.
Schnitta, Edward: *See—*
Greenwood, Arthur R.; Heinze, Walter W.; Schnitta, Edward; and Boyd, David M., 3,706,536.
Schocher, Arno Johannes: *See—*
Batcho, Andrew David; Berger, Julius; Furlenmeier, Andre; Keller, Oscar; Pecherer, Benjamin; Schocher, Arno Johannes; Spiegelberg, Hans; and Vaterlaus, Bruno Peter, 3,706,729.
Schofield, Arthur T., to Manufacturers Brush Company, The. Method and apparatus for intertwisting lengths of filamentary material. 3,706,329, Cl. 140-149.000.
Schon, Nikolaus: *See—*
Leontaritis, Lambis; Schon, Nikolaus; and Hoffmann, Hans, 3,706,124.
Schonzlin Klein & Becker, Aktiengesellschaft: *See—*
Holz, Hans; Kleep, Christian; and Koll, Gunter, 3,706,513.
Schraven, Eckhard: *See—*
Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; Schraven, Eckhard; and Stachel, Adolf, 3,706,739.
Schuierer, Manfred, to Bruckner-Apparatebau Michelstadt GmbH. Method and device for sealing adjacent chambers from each other. 3,706,138, Cl. 34-16.000.
Schuil, Roelof Egbert, to U.S. Philips Corporation. Method of manufacturing a luminescent oxysulphide. 3,706,666, Cl. 252-301.40s.
Schuller, Walter H.: *See—*
Takeda, Hiroshi; Schuller, Walter H.; Lawrence, Ray V.; and Block, Seymour S., 3,706,762.
Schuster, Nick A., to Schlumberger Technology Corporation. Methods for perforating an arth formation. 3,706,340, Cl. 166-297.000.
Schwartz, Harold O.: *See—*
Arsem, Alvan D.; Schwartz, Harold O.; and Ippolito, Anthony C., 3,706,837.
Schweizer, Ernst: *See—*
Schmidt, Paul; Eichenberger, Kurt; and Schweizer, Ernst, 3,706,738.
Scoggin, Barry A.: *See—*
Knell, Harvey A.; Olthoff, James A.; Scoggin, Barry A.; and Smith, Roger M., 3,706,143.
Scott, Benton Boyd: *See—*
Neal, Charles Bailey; and Scott, Benton Boyd, 3,706,849.
Sealectro Corporation: *See—*
Iantorno, James, 3,706,957.
Searle, G. D., & Co.: *See—*
Hershenson, Fred M., 3,706,766.
Sears, Roebuck and Co.: *See—*
Senser, Karl E., 3,706,103.
SEBEC Societe d'Exploitation de Brevets d'Emballage Cosmetique, SA: *See—*
Gruska, Ralph, 3,706,354.
Gruska, Ralph, 3,706,500.
Seeburg Corporation of Delaware, The: *See—*
Britton, Leon R.; and Semerjian, Joseph K., 3,706,863.
Seelbach, Walter C.; and Lampathakis, Kyriakose, to Motorola, Inc. Voltage distribution for integrated circuits. 3,706,130, Cl. 29-584.000.
Seeman, Stephen E.: *See—*
Olsen, Larry C.; Seeman, Stephen E.; Griffin, Bobby I.; and Ambrose, Charles J., 3,706,893.
Seemann, James M.: *See—*
Dashley, Eugene; Tassie, Douglas P.; and Seemann, James M., 3,706,259.
Segalman, Irwin: *See—*
Goldberg, Perry; and Segalman, Irwin, 3,706,203.
Seiler, Claus-Dietrich; Vahlensieck, Hans-Joachim; and Boje, Kurt, to Dynamit Nobel Aktiengesellschaft. Process for the manufacture of vinyl trichlorosilane. 3,706,776, Cl. 260-448.20e.
Seiler, Claus-Dietrich; and Vahlensieck, Hans-Joachim, to Dynamit Nobel AG. Process for the production of alkyl silanes. 3,706,777, Cl. 260-448.20e.
Sekine, Masaoki: *See—*
Ito, Fukuzo; Sekine, Masaoki; and Arai, Yasusuke, 3,706,422.
Sekiya, Masato: *See—*
Fukuda, Tadanori; Takahashi, Masao; Ogihara, Shoji; and Sekiya, Masato, 3,706,589.
Semerjian, Joseph K.: *See—*
Britton, Leon R.; and Semerjian, Joseph K., 3,706,863.
Senser, Karl E., to Sears, Roebuck and Co. Brief and method of production. 3,706,103, Cl. 2-224.00a.
Sesti, Ferdinand: *See—*
Sesti, Joseph J.; and Sesti, Ferdinand, 3,706,456.
Sesti, Joseph J.; and Sesti, Ferdinand. Board game apparatus. 3,706,456, Cl. 273-135.0ac.
Setoguchi, Shinro: *See—*
Nakanishi, Michio; Munakata, Tomohiko; and Setoguchi, Shinro, 3,706,764.
Seus, Edward J.: *See—*
Herz, Arthur H.; Burness, Donald M.; and Seus, Edward J., 3,706,562.
Sewall, Ivan, Inc.: *See—*
Blum, Josef, 3,706,413.

Shaffer, John W., to Sylvania Electric Products, Inc. Photoflash lamp and method of providing deflector-shield therefor. 3,706,522, Cl. 431-93.000.

Sharp Corporation: *See—*
Okamoto, Tosiaki; Mori, Koziro; Yamazaki, Hayao; Abu, Takao; and Sato, Takefumi, 3,706,971.

Shaw, Donald N.: *See—*
Rand, Henry T.; Bohacz, Maxine; Lyon, Jerry; Pitman, Robert L.; Shaw, Donald N.; and Bianchi, John, 3,706,867.

Shayman, Harry I. Decorative acoustical ceiling panel. 3,706,171, Cl. 52-475.000.

Sheldon, Edward J.: *See—*
Hatcher, Burrell R.; Miccioli, Aldo R.; Mohr, Max C.; and Sheldon, Edward J., 3,706,998.

Shell Oil Company: *See—*
Brunner, Guido, 3,706,142.
Grimm, Werner; Olschewski, Karl H.; and Sack, Rolf E., 3,706,520.
Hull, Colin G.; and Boor, John, Jr., 3,706,713.
Lopez, John A., 3,706,684.
Murphey, Carey E., Jr., 3,706,348.
Verheul, Cornelis M.; and Sternling, Charles V., 3,706,534.
Wald, Milton M.; and Quam, Myron G. (said Wald assor. to), 3,706,817.

Shen, Tsung-Ying; Witzel, Bruce E.; and Walford, Gordon L., to Merck & Co., Inc. Substituted phenylsulfonylmethyl salicylic acids and esters and salts thereof. 3,706,792, Cl. 260-520.000.

Shepardson, Harvey K. Spark plugs. 3,706,897, Cl. 313-141.000.

Shepherd, Brian: *See—*
Clements, John Anthony; Goss, Alan Patrick; and Shepherd, Brian, 3,706,890.

Sherwin-Williams Company, The: *See—*
Grivas, John C., 3,706,758.

Shiba, Keisuke; Sueyoshi, Tohru; Akira, Sato; Kubodera, Seiiti; and Tsubota, Motohiko, to Fuji Photo Film Co., Ltd. Photographic emulsion containing optically dye-sensitized silver halide grains of less than 2.2 micron. 3,706,566, Cl. 96-120.000.

Shimizu, Toshihide: *See—*
Koyanagi, Shunichi; Kitamura, Hajime; and Shimizu, Toshihide, 3,706,705.

Shimola, Howard G., to Addressograph-Multigraph Corporation. Method of fixing electrostatically produced images. 3,706,588, Cl. 117-21.000.

Shimosawa, Ron, to Kiku Co. Seating unit. 3,706,471, Cl. 297-158.000.

Shinetsu Chemical Company: *See—*
Koyanagi, Shunichi; Kitamura, Hajime; and Shimizu, Toshihide, 3,706,705.

Shintani, Sotokichi: *See—*
Yanagidaira, Hidetaka; Shintani, Sotokichi; and Michishita, Hisakichi, 3,706,945.

Shoji, Kitimaru: *See—*
Kaneko, Keiji; Shoji, Kitimaru; and Mukai, Minoru, 3,706,180.

Siddall, John B.: *See—*
Henrick, Clive A.; and Siddall, John B., 3,706,733.

Siddall, John B., to Zoecon Corporation. Quaternary alkyl aliphatic ketones. 3,706,804, Cl. 260-593.00r.

Siebecker, Hans; Wichmann, Gunter; and Kurotschka, Georg, to Eltro GmbH & Co. Optical electronic process and apparatus for recording temperature pictures. 3,706,886, Cl. 250-83.3hp.

Siegal, Burton L., to Conco Inc. Conduit cleaning apparatus. 3,706,110, Cl. 15-104.3sn.

Siegel, Maxwell E.: *See—*
Rapoza, Edward J.; Siegel, Maxwell E.; Estelle, Weems E.; Petrucci, Pasquale M.; Linarducci, Joseph S.; Hamma, John; and Montgomery, John, 3,706,499.

Siegele, Frederick Herman, to American Cyanamid Company. Copolymers of fumaric acid and allyl sulfonic acid. 3,706,717, Cl. 260-78.50r.

Siegerist, Walter L., to Meeco, Inc. Adjustable guide holder assembly. 3,706,214, Cl. 72-99.000.

Sielaff, Ernst A., to Collins Radio Company. Vehicle maneuver indicator. 3,706,136, Cl. 33-1.000.

Siemens Aktiengesellschaft: *See—*
Froehlich, Walter; and Lang, Walter, 3,706,851.

Signouret, Jean-Baptiste: *See—*
Esclamadon, Christian; Labat, Yves; and Signouret, Jean-Baptiste, 3,706,806.

Sikes, Robert L. F. Gun holding device. 3,706,403, Cl. 224-1.00r.

Sillion, Bernard: *See—*
Salle, Robert; Sillion, Bernard; and De Gaudemaris, Gabriel, 3,706,803.

Silverstein, Martin S.: *See—*
Stiefel, Ludwig; Silverstein, Martin S.; and Kowalick, James F., 3,706,278.

Simkins, John W.: *See—*
De Vost, Valmore F.; and Simkins, John W., 3,706,229.

Simmonds Precision Products, Inc.: *See—*
Gamble, Ralph S., 3,706,864.

Simon, Horst; and Kirpol, Franz, to Eastman Kodak Company. Photographic apparatus for firing a plurality of flash lamps. 3,706,265, Cl. 95-11.001.

Simonffy, Louis. Spiral drill having unequal cutting faces. 3,706,504, Cl. 408-228/.000.

Simpson, Joseph Elmer. Elevator emergency actuator and rescue unit. 3,706,357, Cl. 187-29.00r.

Singer Company, The: *See—*
Ross, Roger J., 3,706,291.

Sisler, Hampson A. Optical ophthalmodynamometer. 3,706,304, Cl. 128-2.00t.

Siwko, Karol, to GTE Sylvania Incorporated. Television receiver intermediate frequency amplifier circuitry. 3,706,846, Cl. 178-7.30r.

Sjovall, Jan: *See—*
Bergstrom, Sune; and Sjovall, Jan, 3,706,789.

Skinner, James R.; Uitz, Mark O.; and Hait, Paul W., to Action Film, Inc. Motion picture viewer with removable cartridge. 3,706,439, Cl. 352-78.000.

Skralskis, Edward P., to Omark Industries, Inc. Energy absorbing structures. 3,706,359, Cl. 188-1.00c.

Slater, John M.; and Wilcox, Doyle E., to North American Rockwell Corporation. Accelerometer. 3,706,217, Cl. 73-497.000.

Slocum, Donald Hillman: *See—*
Hall, Nelson Lee; and Slocum, Donald Hillman, 3,706,825.

Sluijters, Robert: *See—*
Leibbrand, Bertus; Mertens, Johan J.; Ploeger, Harm A.; Sluijters, Robert; and Van Assendelft, Leendert, 3,706,192.

Smalinskas, Stepas: *See—*
Borneman, Karl J.; Byler, Eichard E.; Roberts, Paul G.; and Smalinskas, Stepas, 3,706,240.

Smatko, Joseph S.: *See—*
Strier, Murray P.; and Smatko, Joseph S., 3,706,601.

Smeulers, Wouter, to U.S. Philips Corporation. Slicing synchronizing pulse separator circuit. 3,706,847, Cl. 178-7.350.

Smith, Donald G., to Lockheed Aircraft Corporation. Auxiliary flap actuator for aircraft. 3,706,431, Cl. 244-42.0da.

Smith, Gerald C., to Eastman Kodak Company. Method and apparatus for correlating rejected photographic prints with corresponding photographic negatives. 3,706,373, Cl. 209-73.000.

Smith, Joseph F., to Pem-Ims Inc. Apparatus for imparting false twist to yarn. 3,706,194, Cl. 57-77.450.

Smith, Robert A., Jr., to Superior Tobacco Machiney & Sheet Metal, Inc. Tobacco threshing apparatus and method. 3,706,314, Cl. 131-145.000.

Smith, Roger M.: *See—*
Knell, Harvey A.; Olthoff, James A.; Scoggin, Barry A.; and Smith, Roger M., 3,706,143.

Smith, Sidney H.: *See—*
Barrager, Stephen M.; Bate, Geoffrey; and Smith, Sidney H., 3,706,926.

Smith, Sydney; Hunt, Jerry Donald; and Esler, Richard Brotherton, to Firestone Tire & Rubber Company, The. Aquatic torsion-fatigue test apparatus. 3,706,222, Cl. 73-91.000.

Smith, Thomas M.; and Gregory, Walter D., to Monarch Marking Systems, Inc. Pressure sensitive labels. 3,706,626, Cl. 161-37.000.

Smith, William: *See—*
Ffowces-Williams, John Eirwyn; Hawkins, Roy; Dawson, Hylton; and Smith, William, 3,706,353.

Smiths Industries Limited: *See—*
Clements, John Anthony; Goss, Alan Patrick; and Shepherd, Brian, 3,706,890.

Smyth, Richard K.: *See—*
Bayle, Guy P.; Smyth, Richard K.; and Gustafson, Robert D., 3,706,988.

So, Richard T.; and Mueller, Reinhold, to Solidyne Corporation. Automotive burglar alarm having battery current flow detector. 3,706,966, Cl. 340-63.000.

Socha, Robert P.: *See—*
Hopton, Thomas E.; and Socha, Robert P., 3,706,679.

Societa Italiana Resine S.p.A.: *See—*
Cozza, Giorgio; Bottai, Gabriele; and Barilli, Filippo, 3,706,531.

Societa per l'Esercizio dell'Istituto Sperimentale dei Metalli Leggeri, S.p.A.: *See—*
Di Russo, Ettore; and Conserva, Mario, 3,706,606.

Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine: *See—*
Esclamadon, Christian; Labat, Yves; and Signouret, Jean-Baptiste, 3,706,806.

Soethje, Guenter, to Rehau Plastiks of Canada Limited. Device for providing hollow plastic bodies, and especially plastic pipes, with a reinforced sleeve-end provided with a bead. 3,706,519, Cl. 425-389.000.

Solidyne Corporation: *See—*
So, Richard T.; and Mueller, Reinhold, 3,706,966.

Solomka, Monroe M.; and Aguirre, Enrique Renteria, to Dow-Unquinesa S.A. Automated process for the hydrolysis of titanium sulfate solutions. 3,706,829, Cl. 423-615.000.

Somers, Allen E.: *See—*
Paraskos, John A.; and Somers, Allen E., 3,706,657.

Sonjara, Boris: *See—*
Porter, Frank K., Jr.; and Sonjara, Boris, 3,706,865.

Sonstegaard, Miles H. Airship with internal transfer of lifting gas. 3,706,433, Cl. 244-128.000.

Sorenson, Richard W., to Carling Electric, Inc. Multiple wing switch case. 3,706,869, Cl. 200-168.00c.

Sorrell, Ronald R.: *See—*
Caldwell, James E.; and Sorrell, Ronald R., 3,706,822.

Soucie, Ronald W. Golf driving range construction. 3,706,452, Cl. 273-35.00r.

Soulakis, George: *See—*

Folson, Henry J.; Boxley, Denis V.; Kingsbury, James; Kraitzer, Shlomo; Soulakis, George; and Whittington, Jimmie L., 3,706,153.

Spani, Wayne, to Eastman Kodak Company. Excess 3 to BCD code converter. 3,706,878, Cl. 235-155.000.

Spani, Wayne, to Eastman Kodak Company. BCD to excess 3 code converter. 3,706,880, Cl. 235-155.000.

Sperry Rand Corporation: *See—*
Dunfield, John C. G., 3,706,923.
Hurlburt, Joseph C.; and Freimuth, John H., 3,706,186.
Oleksiak, Robert E., 3,706,976.
Robinson, Robert W., 3,706,934.

Spiegelberg, Hans: *See—*
Batcho, Andrew David; Berger, Julius; Furlenmeier, Andre; Keller, Oscar; Pecherer, Benjamin; Schocher, Arno Johannes; Spiegelberg, Hans; and Vaterlaus, Bruno Peter, 3,706,729.
Edenhofer, Albrecht; Ramuz, Henri; and Spiegelberg, Hans, 3,706,755.

Sprague Electric Company: *See—*
Zeppieri, Dominick John, 3,706,917.

Sprague, James M.; and Ziegler, Carl, to Merck & Co., Inc. (Mono- and Di-substituted sulfamoyl) benzoic acids. 3,706,790, Cl. 260-518.00a.

Sprague, Robert H., to Itek Corporation. Methods for making positive full-color dye-transfer prints. 3,706,559, Cl. 96-48.0pd.

Sprick, Walter F.; Morse, Frank C.; Holzer, Alexander; Meller, Oscar W.; and Lovich, John W., to Goodyear Aerospace Corporation. Baggage and cargo container door mechanism. 3,706,392, Cl. 220-38.000.

Spurbeck, King: *See—*
Lohmann, Arthur M.; Spurbeck, King; and Burg, Raymond H., 3,706,282.

Square D Company: *See—*
Rys, Tadeusz J., 3,706,868.

Squibb, E. R., & Sons., and Inc.: *See—*
Hagan, James J.; Chanod, Edward E.; Feldman, Robert S.; and Cords, Helmuth, 3,706,660.

St. Joe Minerals Corporation: *See—*
Newbury, Dale E.; and Prengaman, Raymond David, 3,706,605.

Stach, Kurt: *See—*
Berger, Herbert; Gall, Rudi; Merdes, Hartmut; Stach, Kurt; Sauer, Winfriede; and Vomel, Wolfgang, 3,706,745.

Stachel, Adolf: *See—*
Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; Schraven, Eckhard; and Stachel, Adolf, 3,706,739.

Stachel, Inge: *See—*
Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; Schraven, Eckhard; and Stachel, Adolf, 3,706,739.

Stachel, Sophie: *See—*
Beyerle, Rudi; Nitz, Rolf-Eberhard; Resag, Klaus; Schraven, Eckhard; and Stachel, Adolf, 3,706,739.

Stackman, Robert W.: *See—*
Davis, Gerald W.; and Stackman, Robert W., 3,706,712.

Stammheim, Andres: *See—*
Dietrich, Werner; and Stammheim, Andres, 3,706,678.

Standard Manufacturing Company: *See—*
Voorhees, Robert W., 3,706,297.

Stanton, Milton W. Artificial fuel log machine. 3,706,540, Cl. 44-2.000.

Stark, Robert E.; and Uba, Toshio, to Gates Rubber Company, The. Resealable safety valve. 3,706,617, Cl. 136-178.000.

Starn, Roy Emerson, Jr.: *See—*
Blackwell, John; Gumprecht, William Henry; and Starn, Roy Emerson, Jr., 3,706,525.

Staudhammer, Karl P.: *See—*
Kirkpatrick, Milton E.; Reger, Jo L.; and Staudhammer, Karl P., 3,706,614.

Stauffer Chemical Company: *See—*
Broadhead, Sharon Ann, nee Rulon, 3,706,575.
Eilers, Kenneth L.; and Kopacki, Adams F., 3,706,686.
Kearnan, James Edward; and Newsbaum, Robert William, 3,706,708.

Stein, Karl Vom: *See—*
Frenzel, Manfred; and Stein, Karl Vom, 3,706,459.

Steinlin, Felix: *See—*
Buehler, Arthur; and Steinlin, Felix, 3,706,698.

Stelzer, William, to Kelsey-Hayes Company. Proportioning device. 3,706,477, Cl. 303-6.00c.

Stephan, J. T.; and Golick, A. J., to Commercial Solvents Corporation. Protein adhesive compositions. 3,706,950, Cl. 156-336.000.

Stephen, Keith H.: *See—*
Mowrey, Rowland G.; Stephen, Keith H.; and Wolfarth, Eugene F., 3,706,561.

Stephenson, Oliver; Wild, Anthony Musgrave; and Hayman, David Frank, to BDH Pharmaceuticals Limited. Esters of p-biphenylylacetic acid with polyhydric alcohols. 3,706,782, Cl. 260-469.000.

Sterling, Walter S., to Pneumatic Scale Corporation. Closure handling and orienting apparatus. 3,706,368, Cl. 198-33.0aa.

Sternbach, Leo Henryk: *See—*
Fryer, Rodney Ian; and Sternbach, Leo Henryk, 3,706,734.

Sternling, Charles V.: *See—*
Verheul, Cornelis M.; and Sternling, Charles V., 3,706,534.

Stewart, Faye H., to Bohemia Lumber Company, Inc. Aerial logging system. 3,706,385, Cl. 212-71.000.

Stiefel, Ludwig; Silverstein, Martin S.; and Kowalick, James F., to United States of America, Army. Distributed propulsion for guns. 3,706,278, Cl. 102-38.000.

Stimson, Paul B., to United States of America, Navy. Directional inclinometer. 3,706,225, Cl. 73-189.000.

Stocking, John L.: *See—*
Borel, Robert J.; Corey, Leonard S.; Rucharski, Thaddeus W.; Stocking, John L.; and Thomas, Frederick H., 3,706,406.

Stoeger Arms Corporation: *See—*
Wilhelm, Gary, 3,706,152.

Stork, Harald: *See—*
Fauland, Erich; Kampe, Wolfgang; Thiel, Max; Juhran, Wolfgang; Dietmann, Karl; and Stork, Harald, 3,706,728.

Stougaard, Chris, to Racine Railroad Products, Inc. Portable rail drill. 3,706,505, Cl. 408-78.000.

Stournas, Stamoulis; Heiba, El-Ahmadi I.; and Dessau, Ralph M., to Mobil Oil Corporation. Antiknock liquid hydrocarbon fuel containing organic nitrogen containing compounds. 3,706,541, Cl. 44-63.000.

Strapp, Joseph P.; and Cornford, Neri E., to United States of America, Navy. Apparatus for determining the presence of a vessel by detecting its wake. 3,706,962, Cl. 340-4.00r.

Strelshik, Arthur D., to United Aircraft of Canada Limited. Compressor blades. 3,706,512, Cl. 416-236.000.

Strier, Murray P.; and Smatko, Joseph S., to McDonnell Douglas Corporation. Method of producing an electrode with a polymer binder by rolling. 3,706,601, Cl. 136-20.000.

Studinka, Josef; and Gabler, Rudolf, to General Electric Company. Linear aromatic copolythioethers. 3,706,702, Cl. 260-47.00r.

Subramanian, Mahadevan, to Bell Telephone Laboratories, Incorporated. Apparatus for use in measuring phase dispersion produced by apparatus or a system. 3,706,931, Cl. 325-67.000.

Sueyoshi, Tohru: *See—*
Nakazawa, Yoshiyuki; Sueyoshi, Tohru; Sato, Akira; and Nakamura, Yashiharu, 3,706,570.
Shiba, Keisuke; Sueyoshi, Tohru; Akira, Sato; Kubodera, Seiiti; and Tsubota, Motohiko, 3,706,566.

Suffern, Donald Bruce Borders; Osterberg, Arnold Curtis; and Wallo, Kenneth George, to American Cyanamid Company. Crassin acetate used as an analgisic. 3,706,835, Cl. 424-279.000.

Sugino, Osakazu: *See—*
Ushiyama, Rintaro; Sugino, Osakazu; Sato, Shui; Sakamoto, Eiichi; Yamada, Hiroshi; and Kikuchi, Shoji, 3,706,563.

Sugiura, Kaku, to Nippon Electronics Co., Ltd. Automatic alarm system. 3,706,961, Cl. 340-1.00r.

Sumitomo Chemical Company, Limited: *See—*
Usamoto, Teruyoshi; Hatada, Yasutaka; Furuichi, Itsuro; and Matsuo, Masao, 3,706,819.

Sun Oil Company: *See—*
Kirsch, Francis William; Barmby, David S.; and Potts, John D., 3,706,814.
Mills, Ivor W.; Dimeler, Glenn R.; and Kirk, Merritt C., Jr., 3,706,653.

Sunaga, Yasumasa: *See—*
Doi, Yoshikazu; Kishikawa, Toshiro; and Sunaga, Yasumasa, 3,706,484.

Sunbeam Corporation: *See—*
Duve, John P.; and Petry, Stanton H., 3,706,690.

Sunbeam Plastics Corporation: *See—*
Gach, Peter P., 3,706,401.

Sund, Joseph Tat-Hin: *See—*
Yamada, Yoshikazu; Sund, Joseph Tat-Hin; and Logue, Daniel R., 3,706,276.

Sundberg, Yngve, to Allmanna Svenska Elektriska Aktiebolaget. Means for regulating the flow-rate of melt from a container. 3,706,399, Cl. 222-56.000.

Superior Tobacco Machiney & Sheet Metal, Inc.: *See—*
Smith, Robert A., Jr., 3,706,314.

Surgent John G.: *See—*
Dailey, Jack R.; Kuntzleman, Harry C.; and Surgent John G., 3,706,978.

Susi, Peter Vincent. Stabilization of polymers. 3,706,701, Cl. 260-45.85v.

Sweeney, Joseph Patrick; and Rueger, Herman, to AMP Incorporated. Optical aid. 3,706,134, Cl. 29-629.000.

Sweeney, Richard F.: *See—*
Anello, Louis Gene; Sweeney, Richard F.; and Litt, Morton Herbert, 3,706,773.

Swidler, Ronald; and Wilson, Katherine W., to Cotton Incorporated. Process for treating cellulosic material with formaldehyde and sulfur dioxide. 3,706,526, Cl. 8-115.700.

Sybron Corporation: *See—*
Dufault, Emmanuel J., 3,706,571.

Sylvania Electric Products, Inc.: *See—*
Bidell, Frederick W.; Herold, Carl D., Jr.; and Lindholm, James H., 3,706,933.
Cookson, Robert Wilbur, 3,706,902.
Kopelman, Bernard; and Hay, Warren H., 3,706,521.
Shaffer, John W., 3,706,522.

Syntak Company, Ltd.: *See—*
Ishii, Shogo, 3,706,316.

Syntex Corporation: *See—*
Edwards, John A.; and Fried, John H., 3,706,784.
Marx, Michael; and Fried, John H., 3,706,781.

Synvar Associates: *See—*
Becher, Jan; and Ullman, Edwin F., 3,706,537.
Systematic Research & Development Corporation: *See—*
Brillaud, Andre R.; and Gallin, Lawrence F., 3,706,140.
Tagawa, James M., to International Business Machines Corporation. Cassette driven by either vacuum bins or pinch rollers. 3,706,979, Cl. 340-174.10c.
Takahashi, Masao: *See—*
Fukuda, Tadanori; Takahashi, Masao; Ogihara, Shoji; and Sekiya, Masato, 3,706,589.
Takasago Perfumery Co., Ltd.: *See—*
Moroe, Tatsuo; Komatsu, Akira; Akutagawa, Susumu; Sakaguchi, Toshiaki; and Matsuyama, Hirokazu, 3,706,809.
Takeda, Hiroshi; Schuller, Walter H.; Lawrence, Ray V.; and Block, Seymour S., to United States of America, Agriculture. Fungicidal method. 3,706,762, Cl. 424-308.000.
Talarico, Lawrence J., to Anderson Bros. Mfg. Co. Rotary heat-sealing and cut-off mechanism. 3,706,183, Cl. 53-329.000.
Tanaka, Hiroshisa; Wada, Mitiaki; and Kaneko, Keiji, to Fuji Photo Film Co., Ltd. Bag opening and supplying device. 3,706,179, Cl. 53-188.000.
Tangen, Oddvar; Berman, Herbert J.; and Marfey, Peter. Method for the separation of cells from solutes accompanying said cells. 3,706,661, Cl. 210-24.000.
Tassie, Douglas P.: *See—*
Dashley, Eugene; Tassie, Douglas P.; and Seemann, James M., 3,706,259.
Taub, Jack D., to Davis, G. W., Corporation. Rotary power having an improved deflector for the discharge outlet. 3,706,190, Cl. 56-13.400.
Taylor, Alfred E. Flexible molding strip and method of making same. 3,706,173, Cl. 52-716.000.
Taylor, Clarence Reynold, to Eastman Kodak Company. Apparatus for cleaning a residual image from a photosensitive member. 3,706,108, Cl. 15-1.500.
Taylor, John W., Jr., to United States of America, Air Force. Digital motion compensation system for radar. 3,706,989, Cl. 343-7.00a.
Taylor, Lawrence B.; Bentz, Raymond L.; and Porter, Robert B., to United States of America, Navy. Carbon monoxide burner for undersea habitats. 3,706,535, Cl. 23-288.000.
Technica-Guss GmbH: *See—*
Krall, Heriberi; and Koch, Hans Adalbert, 3,706,336.
Tedeschi, Armand E., Jr., to Christmas, Mr., Incorporated. Stand for an artificial tree or the like. 3,706,435, Cl. 248-48.000.
Tenneco Chemicals Inc.: *See—*
Rumanowski, Edmund J., 3,706,548.
Walker, David G.; and Keyworth, Donald A., 3,706,181.
Teotino, Uberto; and Bella, Davide Della, to Whitefin Holding SA. Pyrrylaminoketone derivatives. 3,706,750, Cl. 260-293.710.
Terkelsen, Bruce E.: *See—*
Barrow, Robert B.; and Terkelsen, Bruce E., 3,706,338.
Teves, Alfred, GmbH: *See—*
Klein, Hans-Christof, 3,706,479.
Tewsbury, Stuart Keene, to Bell Telephone Laboratories, Incorporated. Discrete adaptive delta modulator. 3,706,944, Cl. 332-11.00d.
Texaco Inc.: *See—*
Day, Frederic F.; Emery, George E.; and Dadura, James G., 3,706,632.
Texas Instruments, Incorporated: *See—*
Paluck, Robert J., 3,706,975.
Theer, Anton, to Agfa Gevaert A.G. Cinematographic apparatus. 3,706,427, Cl. 242-205.000.
Theurer, Josef: *See—*
Plasser, Franz; and Theurer, Josef, 3,706,284.
Thiel, Max: *See—*
Fauland, Erich; Kampe, Wolfgang; Thiel, Max; Juhran, Wolfgang; Dietmann, Karl; and Stork, Harald, 3,706,728.
Thieme, Gerhard: *See—*
Gehlen, Hermann Walter; Hartmann, Karl; and Thieme, Gerhard, 3,706,209.
Thiokol Chemical Corporation: *See—*
Collman, Joel, 3,706,257.
Tholome, Roger, to Tunzini-Sames. Electro-aerodynamic generator. 3,706,894, Cl. 310-10.000.
Thomas, Frederick H.: *See—*
Borel, Robert J.; Corey, Leonard S.; Rucharski, Thaddeus W.; Stocking, John L.; and Thomas, Frederick H., 3,706,406.
Thomas, James L. Shopping cart. 3,706,460, Cl. 280-33.99f.
Thomas-Collignon, Jean Charles Marie, to Bertin & Cie. Transport systems utilizing a track supplied with fluid under pressure. 3,706,476, Cl. 302-31.000.
Thompson, Quentin E., to Monsanto Company. Sewage disposal system. 3,706,664, Cl. 210-65.
Thomson, J. Brent, to Hercules Incorporated. Adhesion promoting agents. 3,706,592, Cl. 117-72.000.
Thomson-CSF: *See—*
Carre, Roland, 3,706,990.
Galves, Jean-Pierre; Monfroy, Henri; and Reboul, Jean-Philippe, 3,706,899.
Thornell, Ernest La Verne, to Marlin Toy Products, Inc. Musical wristwatch toy. 3,706,156, Cl. 46-175.00r.
Thuler, Oscar, to Conrad Precision Industries, Inc. Method for producing tubular radioactive light sources. 3,706,543, Cl. 65-105.000.
Tice, Homer A.: *See—*
Chappelow, Ronald E.; Elijah, Leo E.; Elliott, Virgil L.; Grochowski, Edward G.; Harrison, Harry D.; Tice, Homer A.; and York, Ralph S., 3,707,003.
Tile Council of America, Inc.: *See—*
Bernett, Frank E.; and Kleinhans, Robert J., 3,706,696.
Tocquec, Yves; and Rabadeux, Andre, to Compagnie Industrielle des Telecommunication Cit-Alcatel. Cassegranninan antenna having limited spillover energy. 3,706,999, Cl. 343-782.000.
Toensing, Eyvand E., to Audiomatic Techniques Inc. Stop control for a reel to reel drive mechanism. 3,706,424, Cl. 242-191.000.
Toet, Gary M. Harvesting machine especially for tree fruits. 3,706,187, Cl. 56-329.000.
Toftness, Irwing N. Device for applying and releasing pressure. 3,706,309, Cl. 128-69.000.
Tokarz, Leo T., to Mohr, John, & Sons. Blast furnace charging apparatus for high top pressure. 3,706,387, Cl. 214-37.000.
Toki, Masamichi; Hikota, Toyohiko; and Okamoto, Miyoshi, to Toray Industries, Inc. Method for producing composite sheets composed of polymeric fibers and elastic material. 3,706,613, Cl. 156-85.000.
Tokico Ltd.: *See—*
Kato, Mahiko; Saito, Isamu; and Nishiba, Tuneo, 3,706,398.
Tokutomi, Seijiro: *See—*
Uno, Naoyuki; and Tokutomi, Seijiro, 3,706,266.
Tokyo Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Ito, Fukuzo; Sekine, Masaoki; and Arai, Yasusuke, 3,706,422.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Tsuneta, Asahide; and Harao, Norio, 3,706,909.
Tokyo Shibuara Electric Company, Limited: *See—*
Inagaki, Junpei, 3,706,922.
Tolliver, Donald L.: *See—*
Barone, Frank J.; and Tolliver, Donald L., 3,706,918.
Tolson, Raymond C. Jr.: *See—*
Tolson, Raymond C. Sr.; and Tolson, Raymond C. Jr., 3,706,573.
Tolson, Raymond C. Sr.; and Tolson, Raymond C. Jr., to G. T. Products, Inc. Fried rice product and process for producing same. 3,706,573, Cl. 99-80.00r.
Toray Industries, Inc.: *See—*
Fukuda, Tadanori; Takahashi, Masao; Ogihara, Shoji; and Sekiya, Masato, 3,706,589.
Toki, Masamichi; Hikota, Toyohiko; and Okamoto, Miyoshi, 3,706,613.
Toroid Corporation: *See—*
Paelian, Owen; Rister, Donald R.; and Kellar, Richard L., 3,706,349.
Toscotech Corporation: *See—*
Crockett, Richard H., 3,706,482.
Trabilcy, William J. System for electrically heating fluid-conveying pipe lines and other structures. 3,706,872, Cl. 219-300.000.
Trapasso, Louis E., to Celanese Corporation. Adducts of a polymer of a cyclic ether and a sultone. 3,706,707, Cl. 260-79.30r.
Trotter, John Edmund: *See—*
Hamblyn, Stephen Mark Lesley; Money, Anthony Patrick; Mackinnon, Ian Malcolm; and Trotter, John Edmund, 3,706,652.
Truth Incorporated: *See—*
Martin, Jerry L., 3,706,467.
TRW Inc.: *See—*
Hagan, Melvin A.; and Batista, Roy I., 3,706,539.
Irwin, Arthur S., 3,706,483.
Kirkpatrick, Milton E.; Reger, Jo L.; and Staudhammer, Karl P., 3,706,614.
Wu, Joseph; and Conway, Joseph Rae, 3,706,137.
Tsang, Paul J.: *See—*
Li, Pei-Ching; and Tsang, Paul J., 3,706,597.
Tsubota, Motohiko: *See—*
Shiba, Keisuke; Sueyoshi, Tohru; Akira, Sato; Kubodera, Seiiti; and Tsubota, Motohiko, 3,706,566.
Tsuchihashi, Genichi: *See—*
Fujisawa, Tamotsu; Ohtsuka, Noriko; Kobori, Takeo; and Tsuchihashi, Genichi, 3,706,805.
Tsuchiya, Kaichi: *See—*
Nagashima, Shinichiro; and Tsuchiya, Kaichi, 3,706,551.
Tsuneta, Asahide; and Harao, Norio, to Tokyo Shibaura Electric Co., Ltd. Cathode ray tube with mutually intersecting focusing coils. 3,706,909, Cl. 315-27.0gd.
Tucker, Council A., to Matter Mfg. Corporation. Wall-recessed suction cleaner. 3,706,184, Cl. 55-356.000.
Tuffias, Robert H.: *See—*
Noar, Raymond; Tuffias, Robert H.; and Gow, Kenneth P., 3,706,231.
Tung, Stephen Yi-Sun: *See—*
Whitworth, Anthony James; Lees, William Arthur; Tung, Stephen Yi-Sun; and Hajto, Ernest Anthony, 3,706,581.
Tunzini-Sames: *See—*
Tholome, Roger, 3,706,894.
Turner, Charles J., Jr., to Lockheed Aircraft Corporation. Beacon providing visual direction information. 3,706,968, Cl. 340-25.000.
Turnhout, Jan Van, to Nederlandse Organistie voor Toegepast-Natuurweten-schappelyk Onderzoek Ten behoeve van Nyverheid. Method for the formation of a unilaterally metallized electret foil. 3,706,131, Cl. 29-592.000.
Tzentia, Leonidas S., to Dow Badische Company. Wet spinning non-circular polyacrylonitrile fibers by utilizing circular orifices and sequential coagulation. 3,706,828, Cl. 264-182.000.
U. S. Industries, Inc.: *See—*

Wald, Ernst A.; and Dodson, Joseph J., Jr., 3,706,205.
Uba, Toshio: *See—*
Stark, Robert E.; and Uba, Toshio, 3,706,617.
Uesugi, Kyozo, to Minolta Camera Kabushiki Kaisha. Automatic diaphragm device for interchangeable lens for single lens reflex camera. 3,706,269, Cl. 95-64.300.
Uffner, Melville W.: *See—*
Moyer, Ronald C.; and Uffner, Melville W., 3,706,590.
Uhrig, Edward O., to United States of American, Air Force. Automatic confidence test for EOM repeater. 3,706,994, Cl. 343-17.700.
Uitz, Mark O.: *See—*
Skinner, James R.; Uitz, Mark O.; and Hait, Paul W., 3,706,439.
Ullman, Edwin F.: *See—*
Becher, Jan; and Ullman, Edwin F., 3,706,537.
Ultee, Casper J., to United Aircraft Corporation. Pulsed hydrogen fluoride laser. 3,706,942, Cl. 331-94.50g.
Umehara, Hanji; Kimura, Takashi; and Hamamoto, Hiroshi, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method for producing a metal die or mold. 3,706,550, Cl. 75-200.000.
Union Oil Company of California: *See—*
Alley, Starling K., Jr., 3,706,815.
Hass, Robert H.; and Reeg, Cloyd P., 3,706,658.
Mickelson, Grant A.; Jones, Darryl L.; and Baral, William J., 3,706,693.
Young, Dean Arthur, 3,706,694.
Uniroyal, Inc.: *See—*
Loveless, Frederick C.; and Miller, Don H., 3,706,718.
Unisto AG: *See—*
Glaser, Jules, 3,706,147.
United Aircraft Corporation: *See—*
Accashian, John, 3,706,432.
Barrow, Robert B.; and Terkelsen, Bruce E., 3,706,338.
Goldberg, Perry; and Segalman, Irwin, 3,706,203.
McLefferty, George H., 3,706,939.
Ultee, Casper J., 3,706,942.
Williamson, John S., 3,706,201.
United Aircraft of Canada Limited: *See—*
Strelshik, Arthur D., 3,706,512.
United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the: *See—*
Ffowces-Williams, John Eirwyn; Hawkins, Roy; Dawson, Hylton; and Smith, William, 3,706,353.
Gardner, Peter, 3,706,494.
Hastings, Garth W., 3,706,611.
United States Borox & Chemical Corporation: *See—*
Hamblyn, Stephen Mark Lesley; Money, Anthony Patrick; Mackinnon, Ian Malcolm; and Trotter, John Edmund, 3,706,652.
United States of America
Agriculture: *See—*
Takeda, Hiroshi; Schuller, Walter H.; Lawrence, Ray V.; and Block, Seymour S., 3,706,762.
Wasley, William L.; and Pittman, Allen G., 3,706,594.
Air Force: *See—*
Geisler, Robert L., 3,706,608.
Kramer, Otis G., 3,706,226.
Lohmann, Arthur M.; Spurbeck, King; and Burg, Raymond H., 3,706,282.
Taylor, John W., Jr., 3,706,989.
Army: *See—*
Bobinski, Jack; and Picard, Jean P., 3,706,280.
Bush, Clarence C., 3,706,228.
Caldwell, Larry V.; and Miller, Brian S., 3,706,920.
Ferguson, Harry R., 3,706,610.
Gottron, Richard N.; and Gaylord, Wilmer, 3,706,227.
La Forgia, Salvatore F., 3,706,487.
Lasser, Howard G., 3,706,645.
Magnuson, Roland A., 3,706,255.
Peacher, Teddy J., 3,706,498.
Petrie, Andrew, 3,706,938.
Porter, Frank K., Jr.; and Sonjara, Boris, 3,706,865.
Rand, Henry T.; Bohacz, Maxine; Lyon, Jerry; Pitman, Robert L.; Shaw, Donald N.; and Bianchi, John, 3,706,867.
Raue, Emil J., 3,706,375.
Stiefel, Ludwig; Silverstein, Martin S.; and Kowalick, James F., 3,706,278.
Voigt, H. William, Jr.; Pell, Lawrence W.; and Picard, Jean P., 3,706,609.
Welford, Gordon D.; and Kelley, Buster E., 3,706,429.
Zimmerman, Theodore, 3,706,279.
Army, mesne: *See—*
Geier, George; and Mimmack, William E., 3,706,496.
Atomic Energy Commission: *See—*
Abbott, Augustus E., 3,706,511.
Cohen, Jerry J.; and Lewis, Arthur E., 3,706,630.
Cohn, Charles E., 3,706,941.
National Aeronautics and Space Administration: *See—*
Hatakeyama, Lawrence F., 3,706,281.
O'Keefe, William J., 3,706,970.
National Aeronautics and Space Administration; Administrator; with respect to an invention of:
Lineback, Lynn D.; and Manning, Charles R. Thermal shock resistant hafnia ceramic material. 3,706,583, Cl. 106-39.00r.
McDougal, Allan R.; and Moore, Richard L. Rotary actuator. 3,706,230, Cl. 74-2.000.
Sauer, Thomas H.; Landel, Robert F.; and Fedors, Robert F. Parallel-plate viscometer with double-diaphragm suspension. 3,706,221, Cl. 73-57.000.
Navy: *See—*
Beck, Emanuel A.; and Bassnett, Arthur J., 3,706,928.
De Vost, Valmore F.; and Simkins, John W., 3,706,229.
Dickson, Robert L.; Johnson, George B.; and Hansen, Kirby W., Jr., 3,706,854.
Duffy, James V.; and Erickson, Porter W., 3,706,691.
Duncan, William E., 3,706,235.
Hancks, Dorothy B.; and Moran, Stephen F., 3,706,293.
Hughes, Richard Smith, 3,706,932.
Johnson, Guy L., 3,706,263.
Katcher, Emanuel Edward, 3,706,258.
Kuck, John H., 3,706,993.
Leland, James M., 3,706,651.
Lichtman, Joseph Z., 3,706,621.
Nordstrom, Wallace C.; and Welles, Albert W., 3,706,963.
Radford, James E., 3,706,294.
Reines, Scott A., 3,706,772.
Renna, Nicholas, Jr., 3,706,967.
Stimson, Paul B., 3,706,225.
Strapp, Joseph P.; and Cornford, Neri E., 3,706,962.
Taylor, Lawrence B.; Bentz, Raymond L.; and Porter, Robert B., 3,706,535.
Vass, Oscar R., 3,706,964.
Willard, Robert C.; Craig, Jimmie M.; and Jackson, Lloyd J., 3,706,277.
Air Force: *See—*
Uhrig, Edward O., 3,706,994.
Universal Oil Products Company: *See—*
Arrigo, Joseph T., 3,706,802.
Brewer, Gerald L., 3,706,533.
De Rosset, Armand J.; and Neuzil, Richard W., 3,706,812.
Greenwood, Arthur R.; Heinze, Walter W.; Schnitta, Edward; and Boyd, David M., 3,706,536.
Neuzil, Richard W., 3,706,813.
Weith, James D., 3,706,655.
Weith, James D., 3,706,656.
Uno, Naoyuki; and Tokutomi, Seijiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera operating with preparatory and synchronous light. 3,706,266, Cl. 95-11.00l.
Upjohn Company, The: *See—*
Herr, Milton E.; Murray, Herbert C.; and Fonken, Gunther S., 3,706,801.
Moon, Malcolm W., 3,706,743.
U.S. Philips Corporation: *See—*
De Neve, Gerard Marie Jules, 3,706,901.
Schuil, Roelof Egbert, 3,706,666.
Smeulers, Wouter, 3,706,847.
Van Beek, Ferdinandus Maria Josephus, 3,706,900.
Usamoto, Teruyoshi; Hatada, Yasutaka; Furuichi, Itsuro; and Matsuo, Masao, to Sumitomo Chemical Company, Limited. Vulcanizable rubber composition comprising accelerator, EPDM and diolefin rubber. 3,706,819, Cl. 260-889.000.
Ushiyama, Rintaro; Sugino, Osakazu; Sato, Shui; Sakamoto, Eiichi; Yamada, Hiroshi; and Kikuchi, Shoji, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide photographic material. 3,706,563, Cl. 96-84.00a.
Vahlensieck, Hans-Joachim: *See—*
Seiler, Claus-Dietrich; Vahlensieck, Hans-Joachim; and Boje, Kurt, 3,706,776.
Seiler, Claus-Dietrich; and Vahlensieck, Hans-Joachim, 3,706,777.
Vallak, Enn.: *See—*
Allvin, Bertil Hilmer, 3,706,682.
Van Assendelft, Leendert: *See—*
Leibbrand, Bertus; Mertens, Johan J.; Ploeger, Harm A.; Sluijters, Robert; and Van Assendelft, Leendert, 3,706,192.
Van Beek, Ferdinandus Maria Josephus, to U.S. Philips Corporation. Projection filament lamp. 3,706,900, Cl. 313-222.000.
Van Blaricom, Lloyd Eugene: *See—*
Gray, Kenneth Russell; Van Blaricom, Lloyd Eugene; Herrick, Franklin Willard; and Deweyert, Harvey Rudolph, 3,706,545.
Van Buren, George F. Lighting control system. 3,706,914, Cl. 315-316.000.
Van Schaik, Gerard, to Dynamic Tools Ltd. Manual hydraulically-operated tools. 3,706,245, Cl. 81-301.000.
Vandenberg, Edwin J., to Hercules Incorporated. Polyethers containing pendant metal thiosulfate groups. 3,706,706, Cl. 260-79.30r.
VanHeerden, Philip; in his Capacity of minister of Water Development for the Government of Rhodesia: *See—*
Anderson, James Mitchell, 3,707,000.
Vann, Roy R. Tubing conveyed permanent completion method and device. 3,706,344, Cl. 166-297.000.
Varian Associates: *See—*
Heer, John, 3,706,128.
Vass, Oscar R., to United States of America, Navy. Expanding deep water sound source vehicle. 3,706,964, Cl. 340-5.00r.
Vaterlaus, Bruno Peter: *See—*

Batcho, Andrew David; Berger, Julius; Furlenmeier, Andre; Keller, Oscar; Pecherer, Benjamin; Schocher, Arno Johannes; Spiegelberg, Hans; and Vaterlaus, Bruno Peter, 3,706,729.

Vendo Company, The: *See—*
Ptacek, James F., 3,706,374.

Verheul, Cornelis M.; and Sternling, Charles V., to Shell Oil Company. Mixing nozzle for gases. 3,706,534, Cl. 23-284.000.

Vessey, Clifford A.; Albon, Colin; and Holker, Kenneth, to Albright & Wilson Limited. Metal coatings comprising hexavalent chromium, trivalent chromium, silica or a silicate and an alkali metal cation. 3,706,603, Cl. 148-6.200.

Vicari, Felix J., to ACF Industries, Incorporated. Manual override indicator for gate valve. 3,706,321, Cl. 137-554.000.

Vickers-Zimmer Aktiengesellschaft Planung und Bau von Industrieanlagen: *See—*
Hardung-Hardung, Heimo; Corsepius, Horst; and Hofmann, Hansdieter, 3,706,647.

Villey-Desmeserets, Franck Pierre Antoine: *See—*
Bouisse, Jean Marie Germain; Martel, Charles Etienne Georges; and Villey-Desmeserets, Franck Pierre Antoine, 3,706,283.

Vineyard, Billy D.: *See—*
Coran, Aubert Y.; and Vineyard, Billy D., 3,706,667.

Vissers, H., N.V.: *See—*
Vissers, Herbert, 3,706,346.

Vissers, Herbert, to Vissers, H., N.V. Movement absorbing lower links hitch frame pivotally connected about an upwardly forwardly inclined axis to a reciprocating harrow. 3,706,346, Cl. 172-102.000.

Vogelsberg, R. Eric: *See—*
Godoy, Humbert C.; and Vogelsberg, R. Eric, 3,706,879.

Vogt, Herwart C.; and Davis, Grosse Ile Pauls, to BASF Wyandotte Corporation. Cross-linked nitrogen-and chlorine-containing cellular plastics and a method for the preparation thereof. 3,706,683, Cl. 260-2.50r.

Voigt, H. William, Jr.; Pell, Lawrence W.; and Picard, Jean P., to United States of America, Army. TNT composition containing a cellulosic resin which is free from oily exudation upon storage. 3,706,609, Cl. 149-18.000.

Vomel, Wolfgang: *See—*
Berger, Herbert; Gall, Rudi; Merdes, Hartmut; Stach, Kurt; Sauer, Winfriede; and Vomel, Wolfgang, 3,706,745.

Voorhees, Robert W., to Standard Manufacturing Company. Flagstaff swivel. 3,706,297, Cl. 116-174.000.

Wacker-Chemie G.m.b.H.: *See—*
Nitzsche, Siegfried; Burkhardt, Jurgen; and Wegehaupt, Karl-Heinrich, 3,706,591.
Nitzsche, Siegfried; Rurkhardt, Jurgen; and Wegehaupt, Karl-Heinrich, 3,706,775.

Wada, Mitiaki: *See—*
Tanaka, Hiroshisa; Wada, Mitiaki; and Kaneko, Keiji, 3,706,179.

Waechter, Friedrich. Clam opener. 3,706,114, Cl. 17-75.000.

Wainer, Eugene, to Horizons Incorporated. Aqueous composition for depositing phosphors. 3,706,673, Cl. 252-501.000.

Wald, Ernst A.; and Dodson, Joseph J., Jr., to U. S. Industries, Inc. Apparatus and method of making an underwater connection between a structural member and a supporting pile. 3,706,205, Cl. 61-46.000.

Wald, Milton M.: *See—*
Wald, Milton M.; and Quam, Myron G., 3,706,817.

Wald, Milton M.; and Quam, Myron G.; deceased (by Wald, Milton M.; legal representative), said Wald assor. to Shell Oil Company. Block copolymers having dissimilar non-elastomeric polymer. 3,706,817, Cl. 260-880.00b.

Walford, Gordon L.: *See—*
Shen, Tsung-Ying; Witzel, Bruce E.; and Walford, Gordon L., 3,706,792.

Walker, David G.; and Keyworth, Donald A., to Tenneco Chemicals, Inc. Process for the safe handling of C_3 and C_4 acetylenic hydrocarbons. 3,706,181, Cl. 55-63.000.

Wallo, Kenneth George: *See—*
Suffern, Donald Bruce Borders; Osterberg, Arnold Curtis; and Wallo, Kenneth George, 3,706,835.

Wallouch, Rudolph W., to Airco, Inc. Process and composition for the manufacture of oxidation resistant graphite articles. 3,706,596, Cl. 117-169.00a.

Wang, Ting-I, to Atlantic Richfield Company. Polyalkylene glycol mercaptosuccinimides dispersants for lubricant fluids. 3,706,763, Cl. 260-326.50s.

Washbourn, Jack, to Westinghouse Brake and Signal Company, Limited. Brake control valve apparatus. 3,706,480, Cl. 303-36.000.

Wasleski, Daniel M.: *See—*
Gier, Delta W.; and Wasleski, Daniel M., 3,706,786.

Wasley, William L.; and Pittman, Allen G., to United States of America, Agriculture. Fibrous substrate treated with copolymers of fluoroalkyl ethers and maleic anhydride. 3,706,594, Cl. 117-139.50a.

Watts, Lennox: *See—*
Langieri, Michael, Jr.; and Watts, Lennox, 3,706,876.

Weaver, Harry Zane, to RCA Corporation. Magnetic transducer fabrication technique. 3,706,132, Cl. 29-603.000.

Weben Industries, Inc.: *See—*
Bevier, Charles W., 3,706,109.

Weber, Rene: *See—*
Sanz, Manuel Claude; and Weber, Rene, 3,706,233.

Wegehaupt, Karl-Heinrich: *See—*
Nitzsche, Siegfried; Burkhardt, Jurgen; and Wegehaupt, Karl-Heinrich, 3,706,591.
Nitzsche, Siegfried; Rurkhardt, Jurgen; and Wegehaupt, Karl-Heinrich, 3,706,775.

Wehrli, Hans Ueli: *See—*
Jeger, Oskar; and Wehrli, Hans Ueli, 3,706,736.

Wehrli, Hansuli; and Jeger, Oskar, to Ciba-Geigy Corporation. Novel 5β, 19-(epoxy-ethanoimino)-steroids. 3,706,737, Cl. 260-239.55r.

Weijman-Hane, Gunnar. Device for sedimentation of particles from liquid. 3,706,384, Cl. 210-519.000.

Weingarten, Joseph L. Process for reinforcing extruded articles. 3,706,216, Cl. 72-258.000.

Weith, James D., to Universal Oil Products Company. LPG and high purity hydrogen recovery process. 3,706,655, Cl. 208-82.000.

Weith, James D., to Universal Oil Products Company. LPG and high purity hydrogen recovery process. 3,706,656, Cl. 208-82.000.

Welford, Gordon D.; and Kelley, Buster E., to United States of America, Army. Missile proportional navigation system using fixed seeker. 3,706,429, Cl. 244-3.190.

Welker, Jerry W.: *See—*
Grey, Donald M.; Butler, Lee D.; Welker, Jerry W.; and Crane, Jack W., 3,706,389.

Welles, Albert W.: *See—*
Nordstrom, Wallace C.; and Welles, Albert W., 3,706,963.

Wellford, Walker L., Jr. Non-polluting waste reducer and method. 3,706,662, Cl. 210-63.000.

Werner, Lincoln Harvey, to Ciba-Geigy Corporation. Aminoalkylspirocycloalkanes. 3,706,756, Cl. 260-295.500.

Werner, Per Gunnar. Sealing means for doors. 3,706,162, Cl. 49-312.000.

Wessinger, Lon H. Poultry-handling system. 3,706,300, Cl. 119-15.000.

Wessling, Ritchie A.; and Zimmerman, Ray G., to Dow Chemical Company, The. Polyxylylidene articles. 3,706,677, Cl. 260-2.00h.

Westendorf, Walter J. Fork attachment for a loader bucket. 3,706,388, Cl. 214-145.000.

Western Electric Company: *See—*
Cushman, Robert Holbrook, 3,706,126.

Western Electric Company, Incorporated: *See—*
La Valle, Thomas A., 3,706,122.

Westinghouse Brake and Signal Company, Limited: *See—*
Washbourn, Jack, 3,706,480.

Westinghouse Electric Corporation: *See—*
Caputo, William R., 3,706,358.

Westland Aircraft Limited: *See—*
Furlong, Owen Desmond, 3,706,270.

Westphal, Bruce A., to Bay Alarm Cormpany. Alarm loop circuit system with light-emitting current-detection means. 3,706,987, Cl. 340-409.00r.

Westvaco Corporation: *See—*
Willett, George L., 3,706,177.

Weyerhaeuser Company: *See—*
Freeman, Harlan G., 3,706,619.

Whatmore, Robert, to Bender, F., Limited. Dispensing apparatus. 3,706,997, Cl. 343-18.00b.

Wheaton Industries: *See—*
Wheaton, Theodore C., III.; and Panas, Walter, 3,706,517.

Wheaton, Theodore C., III.; and Panas, Walter, to Wheaton Industries. Turret indexing means. 3,706,517, Cl. 425-324.000.

Wheeler, Donald J.: *See—*
Wheeler, Donald J.; and Lohrenz, Victor (said Lohrenz assor. to), 3,706,251.

Wheeler, Donald J.; and Lohrenz, Victor, said Lohrenz assor. to Wheeler, Donald J. Shearing apparatus. 3,706,251, Cl. 83-456.000.

Whitefin Holding SA: *See—*
Teotino, Uberto; and Bella, Davide Della, 3,706,750.

Whitledge, Jon Keyes, to Moore, Samuel & Company. Hydraulically actuated apparatus. 3,706,123, Cl. 29-237.000.

Whittington, Jimmie L.: *See—*
Folson, Henry J.; Boxley, Denis V.; Kingsbury, James; Kraitzer, Shlomo; Soulakis, George; and Whittington, Jimmie L., 3,706,153.

Whitworth, Anthony James; Lees, William Arthur; Tung, Stephen Yi-Sun; and Hajto, Ernest Anthony, to Borden Company, The. Soil grouting process and composition. 3,706,581, Cl. 61-36.000.

Wibrow, Gunter, to ITW-Ateco G.m.b.H. Closure cap for inspection holes. 3,706,391, Cl. 220-25.000.

Wichmann, Gunter: *See—*
Siebecker, Hans; Wichmann, Gunter; and Kurotschka, Georg, 3,706,886.

Wilcox, Doyle E.: *See—*
Slater, John M.; and Wilcox, Doyle E., 3,706,217.

Wild, Anthony Musgrave: *See—*
Stephenson, Oliver; Wild, Anthony Musgrave; and Hayman, David Frank, 3,706,782.

Wilhelm, Gary, to Stoeger Arms Corporation. Firearm. 3,706,152, Cl. 42-70.00d.

Wilhelm, Gary. Firearm. 3,706,261, Cl. 89-154.000.

Wilhelm, Max, to Ciba-Geigy Corporation. Hydroxyethanoanthracenes. 3,706,765, Cl. 260-326.14t.

Willard, Robert C.; Craig, Jimmie M.; and Jackson, Lloyd J., to United States of America, Navy. Destruct system improvement. 3,706,277, Cl. 102-27.00r.

Willett, George L., to Westvaco Corporation. Automatic bag closing machine. 3,706,177, Cl. 53-76.000.

William, Alan George, to Black and Decker Manufacturing Company, The. Circular saw guard and linkage. 3,706,332, Cl. 143-159.00h.

Williamson, John S., to United Aircraft Corporation. Dual fluid crossover control. 3,706,201, Cl. 60-39.28r.

Wilmeth, Claude H., to N-S-W Corporation. Wrenching apparatus and method. 3,706,244, Cl. 81-57.320.

Wilms, Carl Alfred, to Jackson, Byron, Inc. Reverse stop for power tongs. 3,706,243, Cl. 81-57.180.

Wilson, Farris H., Jr., to Goodyear Tire and Rubber Company, The. Tetrahydroquinoxaline aldehyde reaction product as antioxonants. 3,706,742, Cl. 260-250.00r.

Wilson, Katherine W.: *See—*
Swidler, Ronald; and Wilson, Katherine W., 3,706,526.

Wilson, Robert G. Barbecue machine edible carrier assembly. 3,706,272, Cl. 99-340.000.

Wiltek, Inc.: *See—*
Burbank, John Emerson, III, 3,706,860.

Wilwerding, Dennis J., to Honeywell Inc. Correct exposure annunciator circuit. 3,706,911, Cl. 315-158.000.

Winterbottom, Kenneth: *See—*
Dobinson, Bryan; and Winterbottom, Kenneth, 3,706,527.
Dobinson, Bryan; Hope, Paul; and Winterbottom, Kenneth, 3,706,528.

Witherow, William W.; deceased (by Rosenberg, Susan M. W.; legal representative). Self-supported soldering device. 3,706,871, Cl. 219-242.000.

Witzel, Bruce E.: *See—*
Shen, Tsung-Ying; Witzel, Bruce E.; and Walford, Gordon L., 3,706,792.

Wolf, Cyril: *See—*
Lichstein, Bernard M.; and Wolf, Cyril, 3,706,795.

Wolfarth, Eugene F.: *See—*
Mowrey, Rowland G.; Stephen, Keith H.; and Wolfarth, Eugene F., 3,706,561.

Wolfe, Paul G., to Philco Ford Corporation. Deflection circuit with means for generating correction waveform. 3,706,907, Cl. 315-27.0gd.

Wondolowski, Lawrence: *See—*
Gibbons, John P.; and Wondolowski, Lawrence, 3,706,726.

Woodruff, Edward T.; and Andersen, Viggo S., to Grace, W. R., & Co. Sugar drying method. 3,706,599, Cl. 127-62.000.

Woodward, Robert C.: *See—*
Clifford, George F., Jr.; and Woodward, Robert C., 3,706,877.

Woolley, Brown J. Packer for wells. 3,706,342, Cl. 166-134.000.

Wright, James R.; and Be Vard, Ralph E., to Eraser Company, Inc., The. Rotary blade cable stripper. 3,706,242, Cl. 81-9.510.

Wright, William Blythe, Jr.: *See—*
Brabander, Herbert Joseph; and Wright, William Blythe, Jr., 3,706,810.

Wu, Joseph; and Conway, Joseph Rae, to TRW Inc. Floated pendulous gyrocompass. 3,706,137, Cl. 33-226.000.

Wunsch, Bruno, to Exatest Messtechnik GmbH. Positioning device for the radiation absorber of thickness measuring devices. 3,706,888, Cl. 250-83.30d.

Wurlitzer Company, The: *See—*
Arsem, Alvan D.; Schwartz, Harold O.; and Ippolito, Anthony C., 3,706,837.

Wyckoff Company: *See—*
Hudson, Charles D., 3,706,580.

Xerox Corporation: *See—*
Masetta, Joseph P., 3,706,488.

Xetca, Inc.: *See—*
Bruckner, Samuel R., 3,706,249.

Yakubowski, Carl, to International Business Machines Corporation. Air slides. 3,706,475, Cl. 302-14.000.

Yamada, Hiroshi: *See—*
Ushiyama, Rintaro; Sugino, Osakazu; Sato, Shui; Sakamoto, Eiichi; Yamada, Hiroshi; and Kikuchi, Shoji, 3,706,563.

Yamada, Yoshikazu; Sund, Joseph Tat-Hin; and Logue, Daniel R., to Bell & Howell Company. Thermal transfer sheet. 3,706,276, Cl. 101-453.000.

Yamada, Yuzo: *See—*
Nabeta, Saburo; Yamada, Yuzo; and Ito, Itsuya, 3,706,779.

Yamazaki, Hayao: *See—*
Okamoto, Tosiaki; Mori, Koziro; Yamazaki, Hayao; Abu, Takao; and Sato, Takefumi, 3,706,971.

Yanagidaira, Hidetaka; Shintani, Sotokichi; and Michishita, Hisakichi, to Kokusai Denshin Denwa Kabushiki Kaisha. Amplitude-modulated eight-phase phase-modulation system. 3,706,945, Cl. 332-17.000.

Yarrington, James C.: *See—*
Bonafino, Edward J.; Doolittle, Frederick W.; Hayes, Charles U.; and Yarrington, James C., 3,706,370.

York, Ralph S.: *See—*
Chappelow, Ronald E.; Elijah, Leo E.; Elliott, Virgil L.; Grochowski, Edward G.; Harrison, Harry D.; Tice, Homer A.; and York, Ralph S., 3,707,003.

Yoshitomi Pharmaceutical Industries, Ltd.: *See—*
Nakanishi, Michio; Munakata, Tomohiko; and Setoguchi, Shinro, 3,706,764.

Youmans, Arthur H., to Dresser Industries, Inc. Pulsed neutron well logging apparatus having for determining background radiation. 3,706,884, Cl. 250-83.30r.

Young, Dean Arthur, to Union Oil Company of California. Catalytic hydrocracking. 3,706,694, Cl. 252-455.00z.

Young, William E.; and Jezuit, Arthur D., to Grace, W. R., & Co. Packaging machine and method of forming packages. 3,706,174, Cl. 53-112.00r.

Youngquist, John A.: *See—*
Bergum, Bernard C.; and Youngquist, John A., 3,706,616.

Youngstown Steel Door Company, The: *See—*
Fritz, William E.; and Koranda, Clarence J., 3,706,287.

Yoviene, Salvatore J. Vehicle bumper. 3,706,468, Cl. 293-88.000.

Zeilinger, Alan F., to Magic American Chemical Corporation. Gravity feed with can supported insert. 3,706,397, Cl. 221-311.000.

Zeiss-Stiftung, Carl: *See—*
Froehlich, Walter; and Lang, Walter, 3,706,851.

Zenith Radio Corporation: *See—*
Korpel, Adrianus, 3,706,965.
Laub, Leonard J., 3,706,843.

Zeppieri, Dominick John, to Sprague Electric Company. Controlled welding technique for a silver container. 3,706,917, Cl. 317-230.000.

Ziegler, Carl: *See—*
Sprague, James M.; and Ziegler, Carl, 3,706,790.

Zimmer, George A., to Borg-Warner Corporation. Manufacture of roller chain. 3,706,199, Cl. 59-8.000.

Zimmer, Jerrold F.: *See—*
Furman, Rudolph S.; and Zimmer, Jerrold F., 3,706,491.

Zimmerman, Ray G.: *See—*
Wessling, Ritchie A.; and Zimmerman, Ray G., 3,706,677.

Zimmerman, Theodore, to United States of America, Army. Combustible cartridge case. 3,706,279, Cl. 102-43.00r.

Zoecon Corporation: *See—*
Siddall, John B., 3,706,804.

Zogg, Jon R.: *See—*
Knapp, Philip B.; and Zogg, Jon R., 3,706,396.

Zyma S.A.: *See—*
Schindler, Claude, 3,706,400.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 19TH DAY OF DECEMBER, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Aldridge, Clyde L.: *See*—
Bunting, William M., and Aldridge. T905,002.
Bunting, William M., and Aldridge. T905,003.

Amin, Rajnikant B., and R. J. Bacher, to E. I. du Pont de Nemours and Co. Process for cleaning gold alloys. T905,007, 12–19–72, Cl. 134—41.

Attwood, Terence E., J. B. Rose, and A. F. Lennox, to Imperial Chemical Industries, Ltd. Aromatic polymers. T905,009, 12–19–72, Cl. 260—49.

Bacher, Rudolph J.: *See*—
Amin, Rajnikant B., and Bacher. T905,007.

Bunting, William M., and C. L. Aldridge. Alcohol containing gasolines. T905,002, 12–19–72, Cl. 44—56.

Bunting, William M., and C. L. Aldridge. Hydroperoxide conversion and epoxidation catalyst. T905,003, 12–19–72, Cl. 260—348.5.

Day, Bruce F., to E. I. du Pont de nemours and Co. Heat-shrinkable plastic films. T905,001, 12–19–72, Cl. 264—25.

Du Pont de Nemours, E. I., and Co.: *See*—
Amin, Rajnikant B., and Bacher. T905,007.
Day, Bruce F. T905,001.
Regester, Richard F. T905,010.
Short, Oliver A. T905,011.

Eastman Kodak C.: *See*—
Welsh, Robert H., and Onorato. T905,013.

Haist, Grant M.: *See*—
King, James R., and Haist. T905,004.

Helwig, Lawrence E., M. V. Murray, and L. B. Ticknor, to United States Steel Corp. Aluminum coating with improved corrosion resistance and method for making same. T905,005. 12–19–72, Cl. 29—195.

Hsu, Rex J., and D. D. Reynolds. Method for developing diazotype elements. T905,012, 12–19–72, Cl. 96—49.

Imperial Chemical Industries, Ltd.: *See*—
Attwood, Terence E., Rose, and Lennox. T905,009.

Johnson, Lou P. and F. J. Trent. Composition for stripping coatings from substrates. T905,006, 12–19–72, Cl. 252—153.

King, James R., and G. M. Haist. Photographic element and process. T905,004, 12–19–72, Cl. 96—49.

Kiscaden, Donald C. Apparatus for liquid treatment of filaments. T905,008, 12–19–72, Cl. 28—59.

Lennox, Alan F.: *See*—
Attwood, Terence E., Rose, and Lennox. T905,009.

Murray, Michael V.: *See*—
Helwig, Lawrence E., Murray, and Ticknor. T905,005.

Onorato, Joseph M.: *See*—
Welsh, Robert H., and Onorato. T905,013.

Regester, Richard F., to E. I. du Pont de Nemours and Co. Composite of polyethylene or polypropylene, an amorphous ethylene-propylene copolymer, and a fibrous alkali metal titanate. T905,010, 12–19–72, Cl. 260—41.

Reynolds, Delbert D.: *See*—
Hsu, Rex J., and Reynolds. T905,012.

Rose, John B.: *See*—
Attwood, Terence E., Rose, and Lennox. T905,009.

Short, Oliver A., to E. I. du Pont de Nemours and Co. Metallizing compositions containing thermofluid vehicles. T905,011, 12–19–72, Cl. 106—1.

Ticknor, Leland B.: *See*—
Helwig, Lawrence E., Murray, and Ticknor. T905,005.

Trent, Parker J.: *See*—
Johnson, Lou P., and Trent. T905,006.

United States Steel Corp.: *See*—
Helwig, Lawrence E., Murray, and Ticknor. T905,005.

Welsh, Robert H., and J. M. Onorato, to Eastman Kodak Co. Fiber-processing procedure. T905,013, 12–19–72, Cl. 8—173.

LIST OF PLANT PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF DECEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Byrum, Roy L., to Joseph H. Hill, Co. Rose plant. 3,272, 12–19–72, Cl. 15.

Driscoll Strawberry Associates, Inc.: *See*—
Johnson, Harold A., Jr. 3,274.
Johnson, Harold A., Jr. 3,275.

Duffett, William E.: *See*—
Mack, Grace H., Jessel, and Duffett. 3,276.

Friesen, Nikolai J. Peach tree. 3,273, 12–19–72, Cl. 43.

Hill, Joseph H., Co.: *See*—
Byrum, Roy L. 3,272.

Jessel, Walter H., Jr.: *See*—
Mack, Grace H., Jessel, and Duffett. 3,276.

Johnson, Harold A., Jr., to Driscoll Strawberry Associates, Inc. Strawberry plant. 3,274, 12–19–72, Cl. 49.

Johnson, Harold A., Jr., to Driscoll Strawberry Associates, Inc. Strawberry plant. 3,275, 12–19–72, Cl. 49.

Mack, Grace H., W. H. Jessel, Jr., and W. E. Duffett, to Grace H. Mack. Chrysanthemum plant. 3,276, 12–19–71, Cl. 75.

LIST OF DESIGN PATENTEES

AMF Inc.: *See*—
Novak, Stanley M., Jr. 225,545.
Purdy, Frederick E. 225,548.

Abel, Ruth: *See*—
Soper, Robert L., and Abel. 225,558.

Ahrens, Claude W. Foldable stadium seat. 225,494, 12–19–72, Cl. D6—41.

Anderson Safeway Guard Rail Corp.: *See*—
Jones, Clifton E. 225,593.

Apple, Charles N., Jr., to Metafab Industries, Inc. Table. 225,501, 12–19–72, Cl. D6—146.

Audesse, Emery G., J. J. Vetere, and A. E. Westlund, Jr., to GTE Sylvania Inc. Portable light. 225,565, 12–19–72, Cl. D48—24.

Bandoski, Stanley J., Jr.: *See*—
Flynn, Daniel M., Bandoski, and Clow. 225,531.
Flynn, Daniel M., Bandoski, and Clow. 225,532.

Bardeau, William M. Combined coffee maker and warmer, 225,592, 12–19–72, Cl. D94—3.

Baum, Ronald, and A. J. Calabrese, to Smith, Kline, & French Laboratories. Culture device. 225,526, 12–19–72, Cl. D16—1.

Baxter Laboratories, Inc.: *See*—
Johbson, Stanley R., and Stewart. 225,525.

Bayly, Peter K., to Wiltshire Cutlery Co. Proprietary Ltd. Scabbard for a knife. 225,559, 12–19–72, Cl. D44—29.

Bean, Wilford E.: *See*—
Lorenz, Leo J., and Bean. 225,521.

Bellini, Mario, to Ing. C. Olivetti & C., S.p.A. Electronic printing calculator. 225,533, 12–19–72, Cl. D26—5.

Bethune, Ade, to Terra-Sancta Creations, Inc. Pendant. 225,560, 12–19–72, Cl. 45—16.

Bixler, Kenneth D.: *See*—
Reifers, Richard F., and Bixler. 225,514.
Reifers, Richard F., and Bixler. 225,515.

Bowers, Arthur C. Altar cross or the like. 225,537, 12–19–72, Cl. D29—23.

Boyce, Elvin L., to Tape-Licator, Inc. Tape applicator. 225,577, 12–19–72, Cl. D74—1.

Breeka, Paul E.: *See*—
Danti, Bernard R., and Breeka. 225,581.

Brescia, Anthony J., to Rubbermaid Commercial Products Inc. Refuse container. 225,566, 12–19–72, Cl. D49—30.

Brooks, Philip L., R. S. Reynolds, K. A. Penwarden, and S. H. Gajwani, to GTE Sylvania Inc. Matrix switch panel. 225,594, 12–19–72, Cl. D96—12.

Brown, Jack E. Covered pitcher. 225,557, 12–19–72, Cl. D44—21.

Brown, Joseph D., to Poloron Products, Inc. Container for liquids. 225,511, 12–19–72, Cl. D9—175.

Burris, Donald J., and J. L. Maulbetsch, to Outdoor Sports Industries, Inc. Riflescope. 225,569, 12–19–72, Cl. D57—1.

Burris, Donald J., and J. L. Maulbetsch, to Outdoor Sports Industries, Inc., mesne. Riflescope. 225,570, 12–19–72, Cl. D57—1.

Calabrese, Anthony J.: *See*—
Baum, Ronald, and Calabrese. 225,526.
Canrad Precision Industries, Inc.: *See*—
Mills, Thomas. 225,561.
Charlton, George G. Nut and bolt holder or similar article. 225,509. 12–19–72. Cl. D8—255.
Clow, William R.: *See*—
Flynn, David M., Bandoski, and Clow. 225,531.
Flynn, Daniel M., Bandoski, and Clow. 225,532.
Cole, Eric L., to Wilkinson Sword Ltd. Sword. 225,527, 12–19–72, Cl. D22—1.
Comfort Lines, Inc.: *See*—
Rossi, Joseph V. 225,493.
Coplon, Robert, to Supermarkets General Corp. Petroleum products service station. 225,517, 12–19–72, Cl. D13—1.
Courtial, Albert W., to Textron Inc. Air cushioned vehicle. 225,575, 12–19–72. Cl. D71—1.
Cross, Marilyn J., to Fort Howard Paper Co. Paper toweling. 225,571. 12–19–72, Cl. D59—2.
Culley, Tommie J. Photo trophy. 225,538, 12–19–72, Cl. D29—28.
Cyr, Steven J., M. W. Whelan, and J. A. Krause, to Standard Oil Co. Covered hot food tray. 225,512, 12–19–72, Cl. D9—185.
Cyr, Steven J., and M. W. Whelan, to Standard Oil Co. Combined multi-unit dish set and tray holder therefor. 225,555, 12–19–72. Cl. D44—10.
Cyr, Steven J., and M. W. Whelan, to Standard Oil Co. Combined multi-unit dish set and tray holder therefor. 225,556, 12–19–72. Cl. D44—10.
Danti, Bernard R., and P. E. Breeka, to Millipore Corp. Power supply. 225,581. 12–19–72, Cl. D83—1.
De Marco, Salvatore R., to Moisture Vent, Inc. Housing for humidifier or deflector or the like. 225,529, 12–19–72, Cl. D23—146.
Diamond International Corp.: *See*—
Reifers, Richard F., and Bixler. 225,514.
Reifers, Richard F., and Bixler. 225,515.
Doblin, Jay: *See*—
Tucker, James E., and Doblin. 225,587.
Engel, Mogens. Coin holder. 225,589, 12–19–72, Cl. D87—3.
Fichtel & Sachs AG: *See*—
Lannoch, Hans-Jurgen. 225,591.
Flexalite Corp.: *See*—
Pommert, Robert C. 225,530.
Flynn, Daniel M., S. J. Bandoski, Jr., and W. R. Clow, to Hampden Engineering Co. Transformer learning center. 225,531. 12–19–72, Cl. D25—1.
Flynn, Daniel M., S. J. Bandoski, Jr., and W. R. Clow, to Hampden Engineering Co. Solid state logic learning center. 225,532. 12–19–72, Cl. D25—1.
Fort Howard Paper Co.: *See*—
Cross, Marilyn J. 225,571.
Freeman, Dixon L. Cabinet shelf bracket. 225,508, 12–19–72, Cl. D8—225.
Funtime Products, Inc.: *See*—
Strayer, Lawrence H., and Pratt. 225,542.
GTE Sylvania Inc.: *See*—
Audesse, Emery G., Vetere, and Westlund. 225,565.
Brooks, Philip L., Reynolds, Penwarden, and Gajwani. 225,594.
Gemini Marine, Inc.: *See*—
Potsdam, Jay A. 225,576.
Gilbert & Baker Mfg. Co.: *See*—
Harris, Billy J., Vergamini, and Yagelowich. 225,567.
Gillette Co., The: *See*—
Tucker, James E., and Doblin. 225,587.
Glisson, James T., to Motivation Systems, Inc. Programmed psychomotor learning laboratory. 225,519, 12–19–72, Cl. D13—1.
Good, Wayne W., to Harter Corp. Decorative cap for use on a chair back support upright or the like. 225,504, 12–19–72, Cl. D6—192.
Grace, W. R., & Co.: *See*—
Schumann, Robert W. 225,516.
Graham, Margaret A. Knit dress or the like. 225,489, 12–19–72. Cl. D2—43.
Grange, Kenneth, T. Nighigami, and C. A. Harrison, to Sears, Roebuck and Co. Sewing machine. 225,574, 12–19–72, Cl. D70—1.
Green, Willis E. Combined tire tool and double warning lamp. 225,562. 12–19–72. Cl. D48—20.
Griffin, Roy D., Sr. Child's toy gun. 225,547, 12–19–72, Cl. D34—15.
Guthrie, James H. Game board. 225,539. 12–19–72. Cl. D34—5.
Halpern, Arthur. Pin wheel toy or similar article. 225,549, 12–19–72. Cl. D34—15.
Hampden Engineering Co.: *See*—
Flynn, Daniel M., Bandoski, and Clow. 225,531.
Flynn, Daniel M., Bandoski, and Clow. 225,532.
Hardesty, Patrick T. Transfer game puzzle. 225,543, 12–19–72. Cl. D34—15.
Harris, Billy J., P. L. Vergamini, and E. T. Yagelowich, to Gilbert & Baker Manufacturing Co. Meter readout unit. 225 567, 12–19–72 Cl. D52—6.
Harris, Roger J. Hood ornament for automobile. 225,524, 12–19–72, Cl. D14—18.
Harter Corp.: *See*—
Good, Wayne W. 225,504.
Hirschl, Paul. Suspension hook for a curtain, or the like. 225,507. 12–19–72. Cl. D8—248.
Hodge, Lynn H. Periscope-type rear view mirror. 225,522, 12–19–72, Cl. D14—6.
Howlett James W., to Howlett Machine Works. Hydraulic jack for prestressing concrete. 225,554. 12–19–72, D41—3.
Howlett Machine Works: *See*—
Howlett, James W. 225,554.
Humphreys, Adolph H., to United States of America, Army. Medal or similar article. 225,536, 12–19–72, Cl. D29—19.
International Biophysics Corp.: *See*—
Reinecke, Jean O. 225,580.
Jimbo, Katumi, to Sharp Corp. Electronic calculating machine. 225,534, 12–19–72, Cl. D26—5.
Johnson, Stanley R., and A. P. Stewart, to Baxter Laboratories, Inc. Biological testing device. 225,525, 12–19–72, Cl. D16—1.
Jones, Clifton E., to Anderson Safeway Guard Rail Corp. Overhead sign support. 225,593, 12–19–72, Cl. D96—12.
Jones, Richard B. Camera support bracket for a tripod. 225,573, 12–19–72. Cl. D61—1.
Kathmann, Wayne F. Combined trailer and kitchen unit. 225,520. 12–19–72, Cl. D14—3.
Keller, Huey T. Headboard for a bedstead or similar article. 225,491, 12–19–72, Cl. D5—4.
King, William R., to Sandoz-Wander, Inc. Full face mask. 225,582, 12–19–72, Cl. D83—1.
Knodt, Ruediger W., and H. Korn, to Xerox Corp. Book stacking unit for xerographic reproduction machine. 225,572, 12–19–72, Cl. D61—1.
Korn, Homer: *See*—
Knodt, Ruediger W., and Korn. 225,572.
Lamb, Thomas. Chair. 225,495, 12–19–72, Cl. D6—67.
Lannoch, Hans-Jurgen, to Fichtel & Sachs AG. Speed shift housing for a bicycle having dual cross bars. 225,591, 12–19–72. Cl. D90—1.
Lara, Julio M. Infant nursing bottle. 225,583, 12–19–72, Cl. D83—8.
Leone, Sal, to Louis Marx & Co., Inc. Toy vehicle. 225,550. 12–19–72. Cl. D34—15.
Lewis, Gerald F. Bookholder or similar article. 225,499–500, 12–19–72, Cl. D6—106.
Lilliston Corp.: *See*—
Moore, William G. 225,551.
Moore, William G. 225,553.
Lorenz, Leo J., and W. E. Bean, to Massey-Ferguson Inc. Tractor. 225,521, 12–19–72, Cl. D14—3.
Mackey, Marvin A. Hanging fountain lamp. 225,563, 12–19–72, Cl. D48—23.
Marx, Louis, & Co., Inc.: *See*—
Leone, Sal. 225,550.
Massey-Ferguson Inc.: *See*—
Lorenz, Leo J., and Bean. 225,521.
Maulbetsch, John L.: *See*—
Burris, Donald J., and Maulbetsch. 225,569.
Burris, Donald J., and Maulbetsch. 225,570.
McArthur, David T., to Survival Oriented Systems Co. Survival lamp or similar article. 225,564. 12–19–72, Cl. D48—24.
McNeil, William J. Residential building. 225,518, 12–19–72, Cl. D13—1.
McVay, Robert D., to United McGill Corp. Tire mold-press or the like. 225,568, 12–19–72, Cl. D54—13.
Medequip Corp.: *See*—
Miller, Walter M. 225,502.
Metafab Industries, Inc.: *See*—
Apple, Charles N., Jr. 225.501.
Miller, Walter M., to Medequip Corp. Interrogation apparatus carrel. 225,502. 12–19–72, Cl. D6—181.
Millipore Corp.: *See*—
Danti, Bernard R., and Breeka. 225,581.
Mills, Thomas, to Canrad Precision Industries, Inc. Cabinet for a sun lamp. 225,561, 12–19–72, Cl. D48—20.
Miyake, Takao: *See*—
Suganova, Yoshio, and Miyake. 225 579.
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De Marco, Salvatore R. 225.529.
Moore, William G., to Lilliston Corp. Design of tines for rotary hoe. 225,551. 12–19–72, Cl. D39—1.
Moore, William G., to Lilliston Corp. Rotary hoe. 225,553, 12–19–72. Cl. D39—1.
Motivation Systems, Inc.: *See*—
Glisson, James T. 225,519.
Nishigami, Teiichi: *See*—
Grange, Kenneth, Nishigami, and Harrison. 225,574.
Noma Lites Canada Ltd.: *See*—
Norton, Ian F. 225,498.
Norton, Ian F., to Noma Lites Canada Ltd. Tree stands. 225 498. 12–19–72, Cl. D6—105.
Novak, Stanley M., Jr., to AMF Inc. Tricycle. 225,545, 12–19–72, Cl. D34—15.
Nunn, Paul B. Bumper. 225,523, 12–19–72, Cl. D14—6.
Olivetti Ing., C., & C., S.p.A.: *See*—
Bellini, Mario. 225 533.
Outdoor Sports Industries, Inc.: *See*—
Burris, Donald J., and Maulbetsch. 225,569.
Burris, Donald J., and Maulbetsch. 225,570.
Owens-Illinois, Inc.: *See*—
Strand, Gordon A. 225,510.
Pigg, Jimmy C.: *See*—
Tate, John R., and Pigg. 225.528.
Pilgrim, William, to Welch Allyn, Inc. Handle for medical diagnostic instruments. 225,584. 12–19–72, Cl. D83—12.
Poloron Products, Inc.: *See*—
Brown, Joseph D. 225.511.
Pommert, Robert C., to Flexalite Corp. Cooling fan. 225,530, 12–19–72. Cl. D23—165.
Pratt Kenneth W.: *See*—
Strayer, Lawrence H., and Pratt. 225,542.
Priore, Daniel. Clamp for corner concrete forms. 225,506, 12–19–72, Cl. D8—72.
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Reinecke, Jean O., to International Biophysics Corp. Medical analytic housing. 225,580, 12–19–72, Cl. D83—1.
Reynolds, Robert S. : *See*—
Brooks, Philip L., Reynolds, Penwarden, and Gajwani. 225,594.
Rice, John D. Chair. 225,496, 12–19–72, Cl. D6—71.
Richardson Smith Inc. : *See*—
Simpkins, Terry J. 225,541.
Rossi, Joseph V., to Comfort Lines, Inc. Folding step ladder. 225,493, 12–19–72, Cl. D6—35.
Rubbermaid Commercial Products Inc. : *See*—
Brescia, Anthony J. 225,566.
Sandoz-Wander, Inc. : *See*—
King, William R. 225,582.
Satoh, Yasuta. Game board. 225,540, 12–19–72, Cl. D34—5.
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Sears, Roebuck and Co. : *See*—
Grange, Kenneth, Nishigami, and Harrison. 225,574.
Sharp Corp. : *See*—
Jimbo, Katumi. 225,534.
Sharp Kabushiki Kaisha (Sharp Corp.). 225,578.
Suganoya, Yoshio, and Miyake. 225,579.
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Simpkins, Terry J., to Richardson Smith Inc. Toy roundabout. 225,541, 12–19–72, Cl. D34—5.
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Baum, Ronald, and Calabrese. 225,526.
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Stahl, Donald P., to Telecommunications Industries, Inc. Illuminable cosmetic case. 225,586, 12–19–72, Cl. D86—10.
Standard Oil Co. : *See*—
Cyr, Steven J., and Whelan. 225,555.
Cyr, Steven J., and Whelan. 225,556.
Cyr, Steven J., Whelan, and Krause. 225,512.
Stewart, Arthur P. : *See*—
Johbson, Stanley R., and Stewart. 225 525.
Strand, Gordon A., to Owens-Illinois, Inc. Bottle. 225,510, 12–19–72, Cl. D9—92.
Strayer, Lawrence H., and K. W. Pratt, to Funtime Products, Inc. Toy film bursting cane. 225,542, 12–19–72, Cl. D34—15.
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Supermarkets General Corp. : *See*—
Coplon, Robert. 225,517.
Survival Oriented Systems Co. : *See*—
McArthur, David T. 225,564.
Swank, Percy A. Footstool. 225,492, 12–19–72, Cl. D6—32.
Tape-Licator, Inc. : *See*—
Boyce, Elvin L. 225,577.
Tate, John R., and J. C. Pigg. Pistol grip for fishing rod. 225,528, 12–19–72, Cl. D22—23.
Taylor, Johnnie D. Sidewalk scooter. 225,546, 12–19–72, Cl. D34—15.
Telecommunications Industries, Inc. : *See*—
Stahl, Donald P. 225,585.
Stahl, Donald P. 225,586.
Testro, Keith R. : *See*—
Testro, Rex C. and K. R. 225,588.
Testro, Rex C. and K. R. Combined blotter pad end portfolio. 225,588, 12–19–72, Cl. D87—3.
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Courtial, Albert W. 225,575.
Tobey, Alton E. Air cooled tire rasping wheel. 225,552, 12–19–72, Cl. D37—1.
Tucker, James E., and J. Doblin, to The Gillette Co. Hair dryer. 225,587, 12–19–72, Cl. D86—10.
United McGill Corp. : *See*—
McVay, Robert D. 225,568.
United States of America, Army : *See*—
Humphreys, Adolph H. 225,536.
Valaguzza, Dino. Suitcase. 225,590, 12–19–72, Cl. D87—5.
Vergamini, Paul L. : *See*—
Harris, Billy J., Vergamini, and Yagelowich. 225,567.
Vetere, John J. : *See*—
Audesse, Emery G., Vetere, and Westlund. 225,565.
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Watanabe, Yasuhiko. Light bulb or the like. 225,535, 12–19–72, Cl. D26—8.
Welch Allyn, Inc. : *See*—
Pilgrim, William. 225,584.
Wigwam Mills, Inc. : *See*—
Sindelar, Raymond R. 225,490.
Wilkinson Sword Ltd. : *See*—
Cole, Eric L. 225,527.
Wiltshire Cutlery Co. Proprietary Ltd. : *See*—
Bayly, Peter K. 225,559.
Whelan, Mark W. : *See*—
Cyr, Steven J., and Whelan. 225,555.
Cyr, Steven J., and Whelan. 225,556.
Cyr, Steven J., Whelan, and Krause. 225,512.
Xerox Corp. : *See*—
Knodt, Ruediger W., and Korn. 225,572.

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NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
3R 3,706,101
84 3,706,102
224A 3,706,103

CLASS 3
36 3,706,104

CLASS 5
93R 3,706,105

CLASS 7
14.1 3,706,106

CLASS 8
21A 3,706,524
21C 3,706,525
115.7 3,706,526
127.5 3,706,527
128A 3,706,528
172 3,706,529
174 3,706,530

CLASS 11
1 3,706,107

CLASS 15
1.5 3,706,108
21E 3,706,109
104.3SN 3,706,110
159A 3,706,111

CLASS 16
82 3,706,112

CLASS 17
73 3,706,113
75 3,706,114

CLASS 23
230R 3,706,532
3,706,537
277C 3,706,533
284 3,706,534
3,706,538
288G 3,706,536
288J 3,706,535

CLASS 24
87C 3,706,115
206 3,706,117
230AV 3,706,116

CLASS 29
1.3 3,706,118
113R 3,706,119
159.1 3,706,120
195 3,706,539
203D 3,706,121
3,706,122
237 3,706,123
424 3,706,124
428 3,706,125
498 3,706,126
576 3,706,127
578 3,706,128
583 3,706,129
584 3,706,130
592 3,706,131
603 3,706,132
622 3,706,133
629 3,706,134

CLASS 30
4R 3,706,135

CLASS 33
1SD 3,706,136
226 3,706,137

CLASS 34
16 3,706,138
60 3,706,140

CLASS 35
18A 3,706,139
45 3,706,141

CLASS 37
4 3,706,143
42 3,706,144
56 3,706,142
105 3,706,145

CLASS 38
75 3,706,146

CLASS 40
2 3,706,147
77.7 3,706,148
106.22 3,706,149
124.1 3,706,150

CLASS 42
1R 3,706,151
70D 3,706,152

CLASS 43
10 3,706,520
53.5 3,706,154

CLASS 44
2 3,706,540
63 3,706,541

CLASS 46
151 3,706,155
175R 3,706,156
202 3,706,153
220 3,706,157
236 3,706,158
240 3,706,159

CLASS 47
21 3,706,160
57.5 3,706,161

CLASS 48
197FM 3,706,542

CLASS 49
312 3,706,162
362 3,706,163
394 3,706,164
403 3,706,165

CLASS 51
12 3,706,166
334 3,706,167

CLASS 52
189 3,706,170
234 3,706,168
263 3,706,169
475 3,706,171
521 3,706,172
716 3,706,173

CLASS 53
39 3,706,175
42 3,706,176
76 3,706,177
112R 3,706,174
131 3,706,178
188 3,706,179
329 3,706,183
386 3,706,180

CLASS 55
63 3,706,181
124 3,706,182
356 3,706,184

CLASS 56
9 3,706,185
11.6 3,706,188
13.4 3,706,189
3,706,190
15.8 3,706,186
329 3,706,187
377 3,706,191

CLASS 57
34HS 3,706,192
58.89 3,706,193
77.45 3,706,194
140BY 3,706,195

CLASS 58
52 3,706,196
58 3,706,197
90R 3,706,198

CLASS 59
8 3,706,199
35 3,706,200

CLASS 60
39.28R 3,706,201
39.65 3,706,203
54.5R 3,706,202

CLASS 61
36R 3,706,581
46 3,706,204
3,706,205
69R 3,706,206
72.6 3,706,207

CLASS 62
55 3,706,208
341 3,706,209

CLASS 65
105 3,706,543
116 3,706,544

CLASS 68
152 3,706,210

CLASS 70
232 3,706,211
369 3,706,212

CLASS 71
1 3,706,545
78 3,706,546
90 3,706,547
121 3,706,548

CLASS 72
58 3,706,213
99 3,706,214
3,706,215
258 3,706,216
379 3,706,218
402 3,706,219

CLASS 73
32 3,706,220
57 3,706,221
91 3,706,222
184 3,706,223
187 3,706,224
189 3,706,225
190H 3,706,226
339A 3,706,227
343R 3,706,228
396 3,706,229
497 3,706,217

CLASS 74
.2 3,706,230
5R 3,706,231
10.6 3,706,232
25 3,706,233
41 3,706,234
52 3,706,235
89.11 3,706,236
410 3,706,237
573 3,706,238
715 3,706,239
869 3,706,240

CLASS 75
60 3,706,549
200 3,706,550

CLASS 81
9.51 3,706,241
3,706,242
57.18 3,706,243
57.32 3,706,244
301 3,706,245

CLASS 83
7 3,706,246
24 3,706,247
69 3,706,249
74 3,706,248
345 3,706,250
456 3,706,251
470 3,706,252

CLASS 84
1.03 3,706,837
433 3,706,253
458 3,706,254

CLASS 86
1 3,706,255
3,706,256
20R 3,706,257

CLASS 89
1.812 3,706,258
12 3,706,259
35R 3,706,260
154 3,706,261

CLASS 91
378 3,706,262
388 3,706,263

CLASS 94
17 3,706,264

CLASS 95
11L 3,706,265
3,706,266
39 3,706,267
53R 3,706,268
64B 3,706,269

CLASS 96
1.4 3,706,552
3,706,553
1.5 3,706,551
1.6 3,706,554
3,706,555
22 3,706,556
27E 3,706,558
29D 3,706,557
29R 3,706,568
48PD 3,706,559
3,706,560
60BF 3,706,561
66.3 3,706,562
84A 3,706,563
114 3,706,564
3,706,565
120 3,706,566
126 3,706,567
134R 3,706,569
137 3,706,570

CLASS 98
1.5 3,706,270
41 3,706,271

CLASS 99
21 3,706,571
69 3,706,574
71 3,706,572
80R 3,706,573
114 3,706,575
118R 3,706,576
3,706,578
140R 3,706,577
340 3,706,272

CLASS 100
189 3,706,273

CLASS 101
333 3,706,274
382MV 3,706,275
453 3,706,276

CLASS 102
27R 3,706,277
38 3,706,278
43R 3,706,279
43 3,706,280
49.5 3,706,281
76R 3,706,282
87 3,706,283

CLASS 104
7B 3,706,284
124 3,706,285
172S 3,706,286

CLASS 105
282R 3,706,287

CLASS 106
1 3,706,579
15AF 3,706,580
39R 3,706,582
3,706,583
178 3,706,700
214 3,706,584
291 3,706,585
3,706,586

CLASS 110
10 3,706,288
18R 3,706,289
184 3,706,290

CLASS 112
77 3,706,291

CLASS 113
1G 3,706,292

CLASS 114
20R 3,706,294
20 3,706,293
41 3,706,295
102 3,706,296

CLASS 116
174 3,706,297

CLASS 117
6 3,706,589
21 3,706,588
38 3,706,595
72 3,706,592
111B 3,706,590
124F 3,706,591
127 3,706,593
139.5A 3,706,594
169A 3,706,596
201 3,706,597
226 3,706,695

CLASS 118
5 3,706,298

CLASS 119
3,706,299
15 3,706,300

CLASS 122
32 3,706,301

CLASS 126
19R 3,706,302
116R 3,706,303

CLASS 127
29 3,706,598
62 3,706,599

CLASS 128
2F 3,706,305
3,706,306
2S 3,706,307
2T 3,706,304
2.06R 3,706,308
69 3,706,309
94 3,706,310
285 3,706,311
305 3,706,312
419D 3,706,313

CLASS 131
145 3,706,314

CLASS 132
33R 3,706,315
76.4 3,706,316

CLASS 134
3 3,706,600
57DL 3,706,317

CLASS 136
20 3,706,601
120FC 3,706,602
175 3,706,616
178 3,706,617

CLASS 137
205 3,706,319
487 3,706,320
554 3,706,321
614.03 3,706,318
625.3 3,706,323
625.41 3,706,324
625.66 3,706,322
3,706,325

CLASS 138
129 3,706,326

CLASS 139
110 3,706,328
187 3,706,327

CLASS 140
1 3,706,330
112 3,706,331
149 3,706,329

CLASS 143
159 3,706,332

CLASS 146
228 3,706,333

CLASS 148
6.16 3,706,604
6.2 3,706,603
11.5R 3,706,605
12.7 3,706,606

CLASS 149
2 3,706,607
6 3,706,608
18 3,706,609
19 3,706,610
44 3,706,611

CLASS 152
209 3,706,334

CLASS 153
160 3,706,914

CLASS 156
17 3,706,612
85 3,706,613
151 3,706,614
169 3,706,615
179 3,706,618
221 3,706,620
285 3,706,621
306 3,706,622
315 3,706,619
336 3,706,950
394 3,706,623
432 3,706,624
517 3,706,625

CLASS 157
1.17 3,706,335

CLASS 161
12 3,706,339
37 3,706,626
131 3,706,627
159 3,706,628

CLASS 162
168 3,706,629

CLASS 164
281 3,706,336
303 3,706,337
357 3,706,338

CLASS 165
70 3,706,343

CLASS 166
134 3,706,342
275 3,706,341
297 3,706,340
3,706,344

CLASS 172
102 3,706,346
572 3,706,345

CLASS 174
25R 3,706,838
45TD 3,706,839
52PE 3,706,840

CLASS 175
85 3,706,347
320 3,706,348

CLASS 176
87 3,706,630

CLASS 177
1 3,706,587
211 3,706,349

CLASS 178
5.4R 3,706,841
6 3,706,842
6.8 3,706,843
3,706,851
7.2 3,706,844
7.3R 3,706,846
7.3S 3,706,847
7.5D 3,706,845
7.92 3,706,848
18 3,706,850
502D 3,706,849

CLASS 179
1A 3,706,852
15AL 3,706,853
15BT 3,706,854
18ES 3,706,855
18GE 3,706,856
100.1DR 3,706,858
100.2CA 3,706,860
100.2P 3,706,861
100.2R 3,706,859
100.2T 3,706,857
170T 3,706,862

CLASS 180
24.09 3,706,350
75 3,706,351
103 3,706,352

CLASS 181
33HC 3,706,353

CLASS 184
7R 3,706,355

CLASS 187
8.59 3,706,356
29R 3,706,357
29 3,706,358

CLASS 188
1C 3,706,359

79.5P 3,706,360
189 3,706,361
282 3,706,362

CLASS 192

3.54 3,706,363
48.92 3,706,364
85CA 3,706,365

CLASS 195

1.8 3,706,631
63 3,706,633

CLASS 197

17 3,706,366
55 3,706,367

CLASS 198

33AA 3,706,368
33AD 3,706,369
76 3,706,370
181 3,706,371
218 3,706,372

CLASS 200

5R 3,706,863
50C 3,706,866
61.52 3,706,867
83B 3,706,864
83T 3,706,865
144R 3,706,868
168C 3,706,869

CLASS 204

46 3,706,634
3,706,635
51 3,706,636
3,706,637
3,706,638
3,706,639
3,706,640
3,706,641
3,706,642
3,706,643
98 3,706,644
143GE 3,706,645
149 3,706,646
162HE 3,706,647
162S 3,706,648
195M 3,706,649
217 3,706,650
218 3,706,651
312 3,706,652

CLASS 208

64 3,706,653
74 3,706,654
82 3,706,655
3,706,656
111 3,706,658
216 3,706,657

CLASS 209

73 3,706,373
75 3,706,374
121 3,706,375
347 3,706,376
446 3,706,377

CLASS 210

21 3,706,659
3,706,660
24 3,706,661
63 3,706,662
64 3,706,663
65 3,706,664
107 3,706,378
169 3,706,379
197 3,706,380
198C 3,706,381
242 3,706,382
374 3,706,383
519 3,706,384

CLASS 212

71 3,706,385

CLASS 213

76 3,706,386

CLASS 214

37 3,706,387
145 3,706,388
152 3,706,389

CLASS 219

98 3,706,870
242 3,706,871
300 3,706,872

CLASS 220

25 3,706,390
3,706,391
38 3,706,392
67 3,706,393

CLASS 221

75 3,706,394
119 3,706,395
265 3,706,396
311 3,706,397

CLASS 222

20 3,706,398
56 3,706,399
95 3,706,400
153 3,706,401

CLASS 223

106 3,706,402

CLASS 224

1R 3,706,403
4E 3,706,404
122AD 3,706,434

CLASS 225

94 3,706,405

CLASS 226

95 3,706,406
97 3,706,407

CLASS 227

45 3,706,408

CLASS 228

6 3,706,409

CLASS 229

16R 3,706,410

CLASS 232

17 3,706,411

CLASS 233

1B 3,706,412
26 3,706,413

CLASS 235

61.1 3,706,873
61.11E 3,706,874
74 3,706,875
3,706,876
151.35 3,706,877
153AC 3,706,879
155 3,706,878
3,706,880
181 3,706,881

CLASS 239

14 3,706,414
17 3,706,415
193 3,706,416
222 3,706,417
428.5 3,706,418

CLASS 240

7.1R 3,706,882

CLASS 241

220 3,706,419

CLASS 242

43 3,706,420
55.19A 3,706,422
55.2 3,706,421
191 3,706,424
195 3,706,423
3,706,425
198 3,706,426
205 3,706,427

CLASS 243

19 3,706,428

CLASS 244

3.19 3,706,429
35 3,706,430
42DA 3,706,431
83R 3,706,432
128 3,706,433

CLASS 248

48 3,706,435
63 3,706,436
230 3,706,437

CLASS 250

59 3,706,883
83.3HP 3,706,886
83.3D 3,706,888
83.3R 3,706,884
3,706,885
219DC 3,706,887

CLASS 251

251 3,706,438

CLASS 252

32.7HC 3,706,665
42.7 3,706,632
49.9 3,706,668
51.5A 3,706,667
82 3,706,669
95 3,706,670
99 3,706,671
156 3,706,672
300 3,706,688
301.1 3,706,689
301.4S 3,706,666
359E 3,706,690
364 3,706,691
432 3,706,692
435 3,706,693
455Z 3,706,694
501 3,706,673
527 3,706,674
539 3,706,675
544 3,706,676

CLASS 254

62 3,706,440
98 3,706,441

CLASS 259

41 3,706,442
72 3,706,443

CLASS 260

2H 3,706,677
2.5AC 3,706,687
2.5AD 3,706,678
2.5AH 3,706,681
2.5AM 3,706,680
2.5E 3,706,679
2.5R 3,706,683
17.2 3,706,682
18EP 3,706,684
22R 3,706,685
23XA 3,706,686
29.2M 3,706,697
29.7E 3,706,696
37NP 3,706,698
40R 3,706,699
45.85V 3,706,701
47R 3,706,702
75NE 3,706,710
75C 3,706,711
75S 3,706,712
77.5AC 3,706,715
77.5AP 3,706,714
77.5D 3,706,713
78VA 3,706,716
78.5CL 3,706,705
78.5R 3,706,704
3,706,717
78.5T 3,706,703
79.3R 3,706,706
3,706,707
79.5 3,706,708
80.71 3,706,709
80.78 3,706,718
3,706,719
82.1 3,706,720
3,706,721
85.5ZA 3,706,722
87.7 3,706,723
94.9GD 3,706,724
157 3,706,725
210R 3,706,726
3,706,729
210.5 3,706,727
211.5R 3,706,728
233.3R 3,706,730
3,706,731
234R 3,706,732
239BB 3,706,736
239D 3,706,735
239.3D 3,706,734
239.55R 3,706,737
243C 3,706,746
247.1 3,706,738
3,706,810
247.2B 3,706,739
248CS 3,706,740
249.6 3,706,741
250A 3,706,743
3,706,744
250R 3,706,742
256.4N 3,706,745
256.5R 3,706,747
260 3,706,748
287R 3,706,749
293.71 3,706,750
294.9 3,706,751
295.5 3,706,756
296D 3,706,752
296R 3,706,753
297R 3,706,754
3,706,755
299 3,706,757
304 3,706,758
305 3,706,759
307D 3,706,760
307H 3,706,761
326.14T 3,706,765
326.3 3,706,766
326.5S 3,706,763
327TH 3,706,764
327E 3,706,733
330.5 3,706,767
332.1 3,706,769
335 3,706,768
346.1R 3,706,770
346.8 3,706,771
348R 3,706,772
408 3,706,773
429.7 3,706,774
448.2E 3,706,775
3,706,776
3,706,777
455R 3,706,778
463 3,706,783
464 3,706,779
465F 3,706,780
468D 3,706,789
468.5 3,706,781
469 3,706,782
473R 3,706,784
475PR 3,706,785
479S 3,706,786
481R 3,706,787
482.2C 3,706,788
513B 3,706,791
518A 3,706,790
520 3,706,792
542 3,706,793
543R 3,706,794
544F 3,706,795
558D 3,706,796
558H 3,706,797
559A 3,706,798
559S 3,706,799
561H 3,706,800
563P 3,706,801
566F 3,706,802
591 3,706,803
593R 3,706,804
609E 3,706,805
609R 3,706,806
624C 3,706,807
638.65 3,706,815
644 3,706,808
658R 3,706,816
665R 3,706,809
669R 3,706,811
674SA 3,706,812
676MS 3,706,813
683.43 3,706,814
880B 3,706,817
885 3,706,818
889 3,706,819
940 3,706,820
951 3,706,821
990 3,706,822
3,706,823

CLASS 261

39D 3,706,444

CLASS 263

2R 3,706,824
8R 3,706,445
19A 3,706,446
37 3,706,447

CLASS 264

75 3,706,825
176F 3,706,826
176 3,706,827
182 3,706,828

CLASS 266

1R 3,706,448
34V 3,706,449

CLASS 270

84 3,706,450

CLASS 273

26A 3,706,451
35R 3,706,452
81.4 3,706,453
89 3,706,454
110 3,706,455
135AC 3,706,456
153S 3,706,457
158 3,706,458

CLASS 277

40 3,706,459

CLASS 280

33.99F 3,706,460
47.26 3,706,461
150AB 3,706,462
3,706,463
401 3,706,464

CLASS 287

85R 3,706,465

CLASS 289

17 3,706,466

CLASS 292

111 3,706,467

CLASS 293

88 3,706,468

CLASS 296

23MC 3,706,469
28C 3,706,470

CLASS 297

158 3,706,471
397 3,706,472
456 3,706,473

CLASS 299

38 3,706,474

CLASS 302

31 3,706,475
3,706,476

CLASS 303

6C 3,706,477
10 3,706,478
21F 3,706,479
36 3,706,480

CLASS 305

27 3,706,481

CLASS 307

205 3,706,889
225 3,706,890
238 3,706,891
241 3,706,892

CLASS 308

1 3,706,482
77 3,706,483

CLASS 310

3B 3,706,893
10 3,706,894

CLASS 313

42 3,706,895
78 3,706,896
141 3,706,897
188 3,706,899
197 3,706,898
222 3,706,900
285 3,706,901
318 3,706,902

CLASS 315

10 3,706,903
19 3,706,904
21CH 3,706,905
22 3,706,906
27GD 3,706,907
3,706,909
27SR 3,706,908
39.51 3,706,910
158 3,706,911
169TV 3,706,912
292 3,706,913

CLASS 317

33SC 3,706,916
230 3,706,917
234R 3,706,915
3,706,920
235R 3,706,918
246 3,706,919

CLASS 318

135 3,706,922
254 3,706,923
564 3,706,921
685 3,706,924

CLASS 323

22T 3,706,925

CLASS 324

33 3,706,938
34R 3,706,926
52 3,706,927

CLASS 325

15 3,706,929
33 3,706,928
56 3,706,930
67 3,706,931
438 3,706,932
479 3,706,933

CLASS 328

1 3,706,934
155 3,706,935

CLASS 330

4.3 3,706,939
21 3,706,936
28 3,706,937

CLASS 331

76 3,706,940
78 3,706,941
94.5G 3,706,942

CLASS 332

9T 3,706,943
11D 3,706,944
17 3,706,945
23 3,706,946

CLASS 333

28R 3,706,947
73C 3,706,948
79 3,706,949

CLASS 337

163 3,706,951
348 3,706,952

CLASS 338

4 3,706,953

CLASS 339

14R 3,706,959
17L 3,706,954
28 3,706,955
66M 3,706,956
126R 3,706,957
177E 3,706,958
258 3,706,960

CLASS 340

1R 3,706,961
4R 3,706,962
5MP 3,706,965
5D 3,706,963
5R 3,706,964
10 3,706,967
25 3,706,968
26 3,706,969
27AT 3,706,970
52B 3,706,971
63 3,706,966
82 3,706,972
172.5 3,706,973
3,706,974
173FF 3,706,975
173R 3,706,976
3,706,977
3,706,978
174.1C 3,706,979
244C 3,706,980
244R 3,706,981
251 3,706,983
258C 3,706,982
347AD 3,706,986
347DD 3,706,984
347D 3,706,985
409R 3,706,987

CLASS 343

6R 3,706,988
6.81C 3,706,992
7A 3,706,989
7.7 3,706,990
3,706,991
3,706,993
17.7 3,706,994
18B 3,706,997
105R 3,706,995
176 3,706,996
754 3,706,998
782 3,706,999

CLASS 346

33TP 3,707,000
33M 3,707,002
74MT 3,707,001

CLASS 350

7 3,706,484
164 3,706,485
167 3,706,486

CLASS 352

78 3,706,439

CLASS 353

11 3,706,487
26 3,706,488

CLASS 355

3 3,706,489
13 3,706,490
133 3,706,491

CLASS 356

4 3,706,493
5 3,706,492
28 3,706,494
3,706,495
121 3,706,498
149 3,706,496
184 3,706,499
188 3,706,497

CLASS 401

78 3,706,354
3,706,500

CLASS 402

15 3,706,501
17 3,706,502
69 3,706,503

CLASS 408

78 3,706,505
130 3,706,506
228 3,706,504

CLASS 415

7 3,706,507
115 3,706,508
131 3,706,509
145 3,706,510

CLASS 416

229 3,706,511
236 3,706,512

CLASS 417

360 3,706,513

CLASS 418

104 3,706,514

CLASS 423

551 3,706,531
615 3,706,829

CLASS 424

153 3,706,831
217 3,706,832
244 3,706,830
251 3,706,833
272 3,706,834
279 3,706,835
297 3,706,836
308 3,706,762

CLASS 425

4 3,706,515
141 3,706,516
324 3,706,517
381 3,706,518
389 3,706,519

CLASS 431

93 3,706,521
3,706,522
126 3,706,523

CLASS 444

1 3,707,003

D02—	43	225,489		248	225,507	D16—	1	225,525			225,543	D48—	20	225,561	D81—	4	225,578
	320	225,490		255	225,508			225,526			225,544			225,562			225,579
D05—	4	225,491			225,509	D22—		225,527			225,545		23	225,563	D83—	1	225,580
D06—	32	225,492	D09—	92	225,510		23	225,528			225,546		24	225,564			225,581
	35	225,493		175	225,511	D23—	146	225,529			225,547			225,565			225,582
	41	225,494		185	225,512	D25—	1	225,530			225,548	D49—	30	225,566		8	225,583
	67	225,495		219	225,514			225,531			225,549	D52—	6	225,567		12	225,584
	71	225,496			225,515			225,532			225,550	D54—	13	225,568	D86—	10	225,585
	95	225,497		232	225,513	D26—	5	225,533	D37—	1	225,552	D57—	1	225,569			225,586
	105	225,498		240	225,516			225,534	D39—		225,551			225,570			225,587
	106	225,499	D13—	1	225,517		8	225,535			225,553	D59—	2	225,571	D87—	3	225,588
		225,500			225,518		23	225,537	D41—	3	225,554	D61—	1	225,572			225,589
	146	225,501			225,519	D29—	19	225,536	D44—	10	225,555			225,573		5	225,590
	181	225,502	D14—	3	225,520		28	225,538			225,556	D70—		225,574	D90—	1	225,591
	190	225,503			225,521	D34—	5	225,539		21	225,557	D71—		225,575	D94—	3	225,592
	192	225,504		6	225,522			225,540		22	225,558			225,576	D96—	12	225,593
	252	225,505			225,523			225,541		29	225,559	D74—		225,577			225,594
D08—	72	225,506		18	225,524		15	225,542	D45—	16	225,560						

CLASSIFICATION OF PLANTS

P. —	15	03,272	P. —	43	03,273	P. —	49	03,274	P. —		03,275	P. —	75	03,276			

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

8—	173	T905,013	44—	56	T905,002			T905,012	134—	41	T905,007	260—	41	T905,010		348.5	T905,003
28—	59	T905,008	96—	49	T905,004	106—	1	T905,011	252—	153	T905,006		49	T905,009	264—	25	T905,001
29—	195	T905,005															

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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1 : 3,706,349
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2 : 3,706,204
4 : 3,706,157
3,706,319
3,706,538
3,706,918
3,706,923
3,706,934
5 : 3,706,234
3,706,433
6 : 3,706,118
3,706,137
3,706,141
3,706,151
3,706,153
3,706,155
3,706,158
3,706,184
3,706,187
3,706,210
3,706,217
3,706,226
3,706,230
3,706,231
3,706,235
3,706,243
3,706,254
3,706,276
3,706,277
3,706,293
3,706,318
3,706,324
3,706,356
3,706,410
3,706,415
3,706,423
3,706,436
3,706,439
3,706,452
3,706,456
3,706,457
3,706,466
3,706,493
3,706,526
3,706,534
3,706,537
3,706,573
3,706,594
3,706,601
3,706,608
3,706,614
3,706,630
3,706,649
3,706,651
3,706,658
3,706,693
3,706,694
3,706,713
3,706,733
3,706,751
3,706,763
3,706,781
3,706,784
3,706,788
3,706,804
3,706,815
3,706,817
3,706,824
3,706,840
3,706,854
3,706,857
3,706,861
3,706,871
3,706,875
3,706,878
3,706,880
3,706,903
3,706,906
3,706,914
3,706,924
3,706,926
3,706,932
3,706,935
3,706,937
3,706,962
3,706,967
3,706,982
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3,706,988
3,706,991
3,707,001
8 : 3,706,220
3,706,426
3,706,482
3,706,659
3,706,811
3,706,904
3,706,911
3,706,913
9 : 3,706,979
3,706,152
3,706,174
3,706,201
3,706,203
3,706,253
3,706,261
3,706,274
3,706,338
3,706,340
3,706,393
3,706,413
3,706,432
3,706,510
3,706,533
3,706,717
3,706,747
3,706,860
3,706,869
3,706,939
3,706,942
3,706,963
10 : 3,706,592
3,706,685
3,706,706
3,706,715
3,706,719
3,706,780
11 : 3,706 258
12 : 3,706,130
3,706,160
3,706,185
3,706,305
3,706,306
3,706,357
3,706,403
3,706,418
3,706,450
3,706,490
3,706,535
3,706,955
3,706,973
3,706,974
13 : 3,706,247
3,706,275
3,706,300
3,706,431
3,706,587
3,706,968
16 : 3,706,540
17 : 3,706,103
3,706,106
3,706,110
3,706,143
3,706,146
3,706,149
3,706,154
3,706,171
3,706,175
3,706,246
3,706,287
3,706,290
3,706,307
3,706,313
3,706,372
3,706,387
3,706,390
3,706,394
3,706,440
3,706,453
3,706,455
3,706,471
3,706,502
3,706,536
3,706,584
3,706,598
3,706,627
3,706,655
3,706,656
3,706,664
3,706,690
3,706,726
3,706,758
3,706,766
3,706,802
3,706,812
3,706,813
3,706,831
3,706,841
3,706,843
3,706,844
3,706,855
3,706,863
3,706,908
3,706,930
3,706,941
3,706,948
3,706,952
3,706,954
3,706,965
3,706,966
18 : 3,706,188
3,706,401
3,706,438
3,706,808
3,706,842
19 : 3,706,112
3,706,136
3,706,297
3,706,388
3,706,395
3,706,631
3,706,663
3,706,730
3,706,731
20 : 3,706,442
3,706,547
3,706,870
21 : 3,706,491
3,706,720
3,706,943
22 : 3,706,113
3,706,177
3,706,244
3,706,724
23 : 3,706,170
3,706,507
24 : 3,706,122
3,706,189
3,706,227
3,706,228
3,706,229
3,706,263
3,706,281
3,706,294
3,706,299
3,706,332
3,706,523
3,706,599
3,706,607
3,706,691
3,706,928
3,706,964
3,706,989
3,706,993
3,706,994
25 : 3,706,116
3,706,132
3,706,193
3,706,225
3,706,232
3,706,303
3,706,327
3,706,368
3,706,382
3,706,412
3,706,420
3,706,443
3,706,521
3,706,557
3,706,559
3,706,560
3,706,865
3,706,877
3,706,883
3,706,898
3,706,902
3,706,910
3,706,917
3,706,919
3,706,936
3,706,946
3,706,947
3,706,970
3,706,976
3,706,998
26 : 3,706,128
3,706,163
3,706,173
3,706,236
3,706,239
3,706,240
3,706,312
3,706,350
3,706,351
3,706,361
3,706,378
3,706,445
3,706,469
3,706,477
3,706,504
3,706,552
3,706,604
3,706,629
3,706,677
3,706,681
3,706,683
3,706,695
3,706,722
3,706,743
3,706,767
3,706,801
3,706,921
3,706,981

27 : 3,706,282
3,706,288
3,706,377
3,706,424
3,706,460
3,706,467
3,706,489
3,706,797
3,706,800
3,706,887
28 : 3,706,333
29 : 3,706,214
3,706,374
3,706,622
3,706,634
3,706,635
3,706,667
3,706,786
3,706,822
30 : 3,706,182
3,706,668
3,706,674
31 : 3,706,161
3,706,164
32 : 3,706,646
33 : 3,706,218
3,706,323
3,706,852
34 : 3,706,126
3,706,139
3,706,183
3,706,206
3,706,212
3,706,238
3,706,248
3,706,279
3,706,280
3,706,291
3,706,298
3,706,322
3,706,330
3,706,358
3,706,375
3,706,379
3,706,411
3,706,419
3,706,487
3,706,499
3,706,508
3,706,517
3,706,518
3,706,539
3,706,541
3,706,548
3,706,572
3,706,574
3,706,577
3,706,586
3,706,595

3,706,609
3,706,648
3,706,660
3,706,670
3,706,672
3,706,684
3,706,686
3,706,696
3,706,701
3,706,707
3,706,723
3,706,729
3,706,734
3,706,741
3,706,744
3,706,748
3,706,756
3,706,761
3,706,769
3,706,771
3,706,772
3,706,773
3,706,774
3,706,792
3,706,795
3,706,807
3,706,825
3,706,830
3,706,835
3,706,845
3,706,850
3,706,858
3,706,867
3,706,872
3,706,876
3,706,881
3,706,929
3,706,931
3,706,938
3,706,944
36 : 3,706,101
3,706,108
3,706,114
3,706,127
3,706,129
3,706,140
3,706,148
3,706,150
3,706,190
3,706,199
3,706,224
3,706,242
3,706,267
3,706,296
3,706,304
3,706,308

3,706,334
3,706,339
3,706,370
3,706,373
3,706,383
3,706,396
3,706,404
3,706,406
3,706,409
3,706,430
3,706,435
3,706,454
3,706,463
3,706,468
3,706,475
3,706,483
3,706,486
3,706,488
3,706,501
3,706,503
3,706,553
3,706,554
3,706,555
3,706,561
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3,706,564
3,706,565
3,706,567
3,706,568
3,706,569
3,706,571
3,706,575
3,706,596
3,706,597
3,706,602
3,706,612
3,706,620
3,706,621
3,706,632
3,706,650
3,706,654
3,706,708
3,706,710
3,706,718
3,706,740
3,706,759
3,706,760
3,706,810
3,706,818
3,706,833
3,706,837
3,706,846
3,706,849
3,706,879
3,706,885
3,706,891
3,706,915
3,706,933
3,706,940

3,706,957
3,706,959
3,706,977
3,706,978
3,706,996
3,707,003
37 : 3,706,194
3,706,407
3,706,583
3,706,712
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6 : 225,499
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54 : 225,539
55 : 225,490
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6 : 03,273
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9 : 03,276
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